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1927 Domestic Gasoline Requirements Placed at 279,800,000 Barrels

By Roger B. Stafford
N. P. N. Staff Writer

CLEVELAND, Jan. 22

OUR estimate for domestic gasoline demand in 1927 is 279,800,000 barrels. This is an increase of 10.5 per cent over domestic demand in 1926 which, with December demand estimated at 19,740,000 barrels, totaled 253,265,000 barrels.

This estimate, as in the past, is based on the number of motor vehicles registered in the 48 states and the District of Columbia at the end of the preceding year. Registration at the end of 1926 totaled 22,043,215—19,223,443 passenger cars and 2,819,772 trucks, according to data collected by Automotive Industries.

The 1926 registration was an increase of 2,199,278 vehicles over the 1925 registration, or 11.08 per cent. The 1925 registration was 13.3 per cent more than the 1924 registration, and the numerical increase 2,238,341 cars. The 1924 registration was 2,292,837 cars more than the 1923 registration which was 3,102,888 more than the 1922 registration. The gain in number of motor vehicles in operation was more in 1923 than in any other year in the history of the automotive industry.

THE following crude oil estimates are based on the rate of operations of American refineries in November, 1926, as given in the U. S. Bureau of Mines report for that month. Variations in rates of operation will mean relative variations in the amount of crude needed. The calculations do not take into consideration any draft on gasoline stocks over 1927; in other words it is assumed gasoline stocks will be at the same level Dec. 31, 1927, as they were Jan. 1.

To meet the domestic gasoline demand approximately 735,672,000 barrels of crude will be needed. Assuming that the excess of exports of gasoline over imports or the volume that will be supplied by American refineries will be 50,000,000 barrels, a liberal figure as the 1926 excess is a little under 40,000,000 barrels, 867,148,000 barrels of charging stock will be needed to produce 306,450,000 of gasoline. The last figure is the difference between the sum of domestic gasoline demand and the excess of exports, minus 23,350,000 barrels of natural gasoline. The natural gasoline figure is 7.08 per cent of the total gasoline demand as given in the preceding sentence, the rate natural gasoline was used by refiners in November.

Crude run to stills in November represented only 91.93 per cent of the total volume of crude consumed that month, as shown by the Bureau of Mines. Should the relationship between charging stock and crude used for fuel and other purposes be maintained during 1927 at the November ratio, 943,270,000 barrels of crude would be needed to meet the 1927 domestic and export demand for crude oil and its chief products.

In other words, refiners will need 867,148,000 barrels of crude and 23,350,000 barrels of natural gasoline to meet the expected motor fuel demand and the difference between that volume of crude and the estimated total demand for crude, 943,270,000 barrels, represents the crude sold for fuel, burned on leases, or used in other ways without being refined.

THIS estimated demand for crude is 111,102,000 barrels more than was consumed in 1926—December consumption of crude having been estimated on the basis of average demand in the preceding 11 months of 1926—or an increase 13.35 per cent. The 1926 crude demand, December estimated, was 832,168,000 barrels.

Demand for lighter gasolines and more cracking are factors which may tend to increase or lessen the demand for crude as charging stock. But in view of the stupendous demand for petroleum, those factors should not cause a very large change from the estimate if the variation is reduced to a percentage basis.

Use of the same proportion of natural gasoline in motor fuels throughout 1927 as last November, would mean a demand of almost 2,000,000 barrels a month, a volume which absorbs the entire output.

Domestic gasoline demand in the first 11 months of 1926 totaled 233,525,000 barrels, as reported by the Bureau of Mines. Demand in the first 11 months of 1925 totaled 205,911,000 barrels. The 1926 increase was 13.4 per cent. This rate of increase follows almost identically the rate of increase in the automobile registrations of the preceding year, the registration increase having been 13.3 per

1926 Estimate Less Than 1% in Error

CLEVELAND, Jan. 22

IT was estimated in these pages one year ago that 1926 domestic gasoline demand would be 10,547,419,000 gallons. Reduced to barrels of 42 gallons, the unit now used by the Bureau of Mines, this volume is 251,129,000 barrels. The 1926 demand was approximately 253,265,000 barrels, 11 months actual figures and December estimated at 19,740,000, or only 500,000 barrels less than November demand. Thus the estimate for 1926 was only 0.84 per cent low. Exact figures for all of 1927 will not be available for two weeks but only a phenomenal rise in the December consumption figures would make the error as much as 1 per cent. The 1925 estimate made two years ago was only 0.69 per cent in error on the low side.

Comparative Automobile Registration Figures for 1926 and 1925

State	Total 1926 Registration	Passenger Cars, 1926	Trucks 1926	Total 1925 Registration	% of Increase
Alabama	225,681	197,671	28,010	194,580	15.98
Arizona	73,574	63,500	10,074	68,029	8.15
Arkansas	209,419	179,480	29,939	183,764	13.96
California	1,600,171	1,383,878	216,293	1,439,463	11.16
Colorado	252,787	232,350	20,437	226,118	11.79
Connecticut	280,800	238,700	42,100	248,474	13.01
Delaware	44,418	36,246	8,172	40,681	9.18
D. of Columbia	129,792	115,633	14,159	93,612	38.64
Florida	416,930	346,492	70,438	260,720	59.91
Georgia	278,051	242,358	35,693	244,871	13.55
Idaho	95,500	86,500	9,000	81,484	17.20
Illinois	1,375,206	1,199,717	175,489	1,263,177	8.86
Indiana	772,910	664,887	108,023	725,410	6.54
Iowa	689,036	639,457	49,579	657,567	4.78
Kansas	491,276	441,373	49,903	457,033	7.49
Kentucky	278,337	249,412	28,925	260,754	6.74
Louisiana	238,000	202,100	35,900	207,000	14.97
Maine	143,616	121,333	22,283	140,134	2.48
Maryland	249,056	236,680	12,376	230,634	7.96
Massachusetts	701,224	609,539	91,685	654,338	7.16
Michigan	1,119,973	970,880	149,093	990,709	13.05
Minnesota	624,478	552,944	71,534	569,694	9.61
Mississippi	210,500	189,000	21,500	177,262	18.75
Missouri	651,350	586,134	65,216	602,900	8.03
Montana	103,946	88,828	15,118	94,656	9.81
Nebraska	361,945	333,874	28,071	338,718	6.86
Nevada	24,014	19,300	4,714	21,185	13.35
New Hampshire	89,001	78,400	10,601	81,250	9.53
New Jersey	651,729	520,423	131,306	579,886	12.38
New Mexico	54,341	52,111	2,230	49,101	10.67
New York	1,816,434	1,461,629	354,805	1,613,141	12.60
North Carolina	385,763	352,217	33,546	351,767	9.66
North Dakota	157,822	145,571	12,251	144,956	8.87
Ohio	1,510,000	1,325,000	185,000	1,305,000	15.70
Oklahoma	510,000	460,000	50,000	438,000	16.44
Oregon	234,125	215,824	18,301	216,324	8.23
Pennsylvania	1,438,303	1,250,356	187,947	1,317,053	9.20
Rhode Island	109,145	89,832	19,313	102,476	6.50
South Carolina	180,967	163,368	17,599	170,658	6.04
South Dakota	168,230	153,840	14,390	168,118	0.06
Tennessee	276,097	251,104	24,993	248,021	11.32
Texas	1,047,202	938,732	108,470	968,406	8.13
Utah	81,633	69,133	12,500	72,490	12.61
Vermont	73,863	68,231	5,632	69,576	6.16
Virginia	321,879	271,000	50,879	281,100	14.50
Washington	361,775	308,237	53,538	332,442	8.82
West Virginia	221,001	194,620	26,381	217,069	1.81
Wisconsin	662,282	581,441	80,841	596,373	11.05
Wyoming	49,633	44,108	5,525	47,712	4.02
Total	22,043,215	19,223,443	2,819,772	19,843,936	+11.08

cent. This is further evidence that domestic gasoline demand follows the increase in number of automobiles in operation, with a one-year lag.

Gasoline tax and inspection figures collected in 31 states and the District of Columbia by the American Petroleum Institute show consumption in the first 11 months of 1926 to have been 14.3 per cent more than in the corresponding time of 1925. November demand was 12.6 per cent more than demand in November, 1925.

Florida continues to be the state in which increase in gasoline consumption is largest. Demand in 1926 grew 41.1 per cent over the 1925 demand for the 11-month periods. Florida demand has more than doubled in the last two years but the November demand was less than 1 per cent more than November, 1925, demand, due probably to stabilization of conditions there and the cessation of the fortune hunters' rush.

COLORADO ranked first in percentage gain in November. Several other Rocky Mountain states made creditable gains over November, 1925. Georgia, Alabama and Mississippi made good progress.

South Dakota has made the poorest showing of any state in every comparison, the two 11-month periods, the Novembers, and in number of cars registered. South Dakota's gain in number of automobiles was less than one-tenth of 1 per cent. Its November gallonage was 6.6 per cent less than its gallonage in the same month of 1925. It increased its gallonage only 3.7 per cent in the first 11 months of 1926 over the same months of 1925.

Automobile registrations increased almost 355,000 in New York and this state maintained its rank as first last year. California remained in second place and Ohio third. Pennsylvania and Illinois were fourth and fifth. Two states, Michigan and Texas, entered the million-car class last year.

As a group the smallest increases in registrations were in the New England states. The middle western agricultural states also lagged, averaging less than the average gain for the entire country. States that did better than the U. S. average are: California, Arkansas, California, Colorado, Connecticut, District of Columbia, Florida, Georgia, Idaho, Louisiana, Michigan, Mississippi, Nevada, New Jersey, New York, Ohio, Oklahoma, Tennessee, Utah and Virginia.

In percentage gain, Florida ranked first but to the oil man who observed hundreds of Florida licenses in northern states after last spring, perhaps dozens in his own locality, there will be some doubt that Florida's percentage gain was not acquired to some extent at the expense of other states.

The National Automobile Chamber of Commerce has given out more optimistic registration figures than Automotive Industries. Its total is 22,330,000: divided, 19,520,000 passenger cars and 2,810,000 trucks. It places world registration at 27,500,000 motor vehicles.

The N. A. C. C. places 1926 automobile production at 4,480,000 motor vehicles, of which 3,950,000 were passenger cars and 530,000 were trucks. Of the passenger cars 74 per cent, or 2,926,000, were closed. It estimates the number of buses in use as 80,000. Bus production amounted to 15,000.

Comparative Gasoline Consumption by States

	Oct., 1926 (Gallons)	Nov., 1926 (Gallons)	Nov., 1925 (Gallons)	Ch'ge Nov., 1926 from Nov. 1925	11 Months Ended With Nov., 1926 (Gallons)	11 Months Ended With Nov., 1925 (Gallons)	1926 Ch'ge over 1925
Alabama	11,450,000	10,910,000	9,447,000	+15.5	116,850,000	97,400,000	+20.0
Arizona	3,601,000	3,014,000	2,555,000	+18.0	30,293,000	25,742,000	+17.7
Arkansas	9,613,000	7,210,000	6,886,000	+ 4.7	91,936,000	77,045,000	+19.3
Colorado	9,938,000	8,519,000	6,008,000	+41.7	103,714,000	91,113,000	+13.8
Delaware	2,407,000	1,831,000	1,355,000	+35.1	18,528,000	16,227,000	+14.8
District of Col.	4,537,000	4,408,000	3,837,000	+14.8	46,783,000	41,096,000	+13.8
Florida	22,322,000	23,092,000	22,960,000	+ 0.6	261,906,000	185,684,000	+41.1
Georgia	15,151,000	15,226,000	12,721,000	+19.7	155,384,000	132,160,000	+17.6
Idaho	3,745,000	3,147,000	2,776,000	+13.3	38,005,000	29,681,000	+28.0
Indiana	29,259,000	28,582,000	24,686,000	+15.8	277,481,000	255,553,000	+ 8.6
Kansas	18,685,000	18,473,000	16,033,000	+15.2	223,262,000	195,445,000	+14.2
*Kentucky	9,269,000	8,467,000	7,433,000	+13.9	96,189,000	92,439,000	+ 4.1
Louisiana	12,114,000	11,565,000	10,133,000	+14.1	122,801,000	107,384,000	+14.1
Maine	7,104,000	5,334,000	4,642,000	+14.9	59,245,000	55,300,000	+ 7.1
Minnesota	25,612,000	20,418,000	20,289,000	+ 0.6	250,533,000	228,173,000	+ 9.8
Mississippi	10,157,000	8,795,000	7,17?,000	+22.6	96,814,000	77,467,000	+25.0
Missouri	23,108,000	23,548,000	22,157,000	+ 6.2	264,617,000	237,804,000	+11.3
Nevada	1,009,000	904,000	768,000	+17.2	10,893,000	8,552,000	+27.4
New Hampshire	3,945,000	3,207,000	2,866,000	+11.9	36,579,000	33,501,000	+ 9.2
New Mexico	2,319,000	2,280,000	1,804,000	+26.4	22,761,000	17,499,000	+30.1
North Carolina	18,220,000	17,518,000	16,666,000	+ 5.1	180,145,000	167,431,000	+ 7.6
North Dakota	7,869,000	4,823,000	4,619,000	+ 4.4	73,247,000	61,867,000	+18.4
Oklahoma	17,835,000	19,081,000	15,717,000	+21.4	19?,145,000	159,964,000	+20.1
Oregon	10,258,000	9,239,000	7,958,000	+16.1	106,151,000	93,072,000	+14.1
South Carolina	7,895,000	7,744,000	7,164,000	+ 8.1	82,172,000	76,620,000	+ 7.2
South Dakota	7,343,000	5,418,000	5,802,000	— 6.6	71,412,000	68,841,000	+ 3.7
Texas	45,729,000	44,985,000	38,755,000	+16.1	471,646,000	422,984,000	+11.5
Utah	3,095,000	2,900,000	2,479,000	+21.0	33,628,000	28,987,000	+16.0
Virginia	12,848,000	12,608,000	10,978,000	+14.9	132,280,000	116,707,000	+13.3
Washington	16,133,000	14,867,000	12,950,000	+14.8	170,810,000	150,284,000	+13.6
West Virginia	8,126,000	6,800,000	5,645,000	+20.5	77,599,000	71,659,000	+ 8.3
Wyoming	2,133,000	1,685,000	1,535,000	+ 9.8	20,505,000	19,679,000	+ 4.2
Total	382,829,000	356,598,000	316,796,000	+12.6	3,936,314,000	3,443,360,000	+14.3
Daily Avg.	12,349,000	11,887,000	10,560,000		11,785,000	10,309,000	
Incr's over prev. yr. Amount	.....	39,802,000	.....		492,954,000	.....	
Percentage	.....	.....	.....		.....	.....	
Iowa	23,722,000	19,593,000	16,651,000	+17.7	234,055,000	.....	
Michigan	50,037,000	45,696,000	39,132,000	+16.8	498,851,000	.....	
Nebraska	14,008,000	11,311,000	11,061,000	+ 2.3	141,226,000	.....	
Ohio	60,499,000	56,867,000	48,061,000	+18.3	620,933,000	.....	
Rhode Island	4,587,000	4,301,000	4,187,000	+ 2.7	47,256,000	.....	
Wisconsin	26,712,000	21,342,000	20,306,000	+ 5.1	251,944,000	.....	

*In Kentucky the figures of the State Tax Commission have been subsituted for those of the Office of Public Accounts.

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8,000 ft. up and 5,100 Down, Well Flows High Gravity Oil

By Lawrence E. Smith
N. P. N. Staff Writer

TULSA, Jan. 22

EIGHT thousand feet above sea level in what is known as North Park, scenic region of north Colorado, is another "distillate" well, similar in performance with the freak wells drilled in the Okotoks region of Alberta, Canada.

This well, 8000 feet up and nearly a mile deep, caused a flurry last week when it was reported to be flowing 150 barrels an hour. What happened was that it made that much in one hour when the gas was passed through a separator. The product recovered was 47.6 gravity on the A. P. I. scale.

Continental Oil Co. drilled the well, in the northwest quarter of 12-9N-79W, on what is known as the North McCallum anticline, Jackson county. Here nearly a year and a half ago the company started drilling, and in December they reached the top of either the Muddy or the Dakota sand at 5110 feet. They were then in a 4-inch hole. At two feet in drilling was stopped as the gas flow was excessive. Estimates were that the well was making upward of 40,000,000 cubic feet of gas. It was also spraying considerable light oil. This oil "froze" and fell like snow and in the congealed form was the only sample obtained at first.

THE well will be drilled 10 feet deeper. A 55,000-barrel tank will be erected as quickly as possible. No rapid progress is expected on this, nor on the two additional wells the Continental will drill on its large block of acreage in the region, as the extremely low temperatures that now prevail at this high altitude handicap field men. Transportation is uncertain, also. A railroad, the Colorado, Wyoming & Eastern, runs from Laramie, Wyo., southward about 40 miles, passing through Walden, the county seat of Jackson county to Coalmont.

This road sometimes suspends operations for several weeks in the winter.

Walden, the little county seat town, and other parts of North Park sometimes are cut off from access to the rest of the world for long periods. Back in 1919, Fred Richardson, drilling superintendent for the Carter Oil Co., was snowbound in Walden for several weeks, finally getting out on snowshoes.

The principal report dealing specifically with this region was Bulletin 596 published in 1915 by the U. S. Geological Survey, on the geology and coal resources of North Park. A. L. Beekly, now chief geologist for the Mid-Continent Petroleum Corp., Tulsa, was the author.

Beekly describes North Park as a great natural depression covering about 1400 square miles and including practically all of Jackson county. The basin is practically enclosed by high mountain ranges. The Continental Divide forms the south and west walls and on the east is the jagged Medicine Bow range.

Coal deposits of the region are of considerable importance and commercial development has been carried on fairly continuously for the past 15 years. The Continental well is on the northern part of the McCallum anticline, the chief structural feature of the region.

At least one other test was drilled on the McCallum structure. This was the Carter Oil Co.'s wildcat in 27-9-78W. It started in the Pierre shale, found a two-foot sand at 1800 feet with a showing of oil, went to 3928 feet and was there abandoned, finding water in the Dakota. The great difference in depths to the Dakota in the Carter and the Continental wells (if the latter indeed is in the Dakota) is chiefly accounted for by greater erosion of surface beds at the Carter well.

Over in the neighboring county to the west, Routt, a number of tests have been drilled, the principal result being the small Tow Creek pool, producing from shales above the Dakota. This is west of the Continental Divide and conditions are not similar to those in North Park. Still farther west of Routt is Moffat county, which contains the Moffat or Craig field, where substantial production is had from the Dakota.

Seeks Use of Uniform Volume Correction

CLEVELAND, Jan. 24.—As a first step in bringing about uniformity in the method used by members of the National Petroleum Association in correcting volume of petroleum products for temperature changes, E. M. Lyons, Tiona Refining Co., trustee in charge of the department of trade and commerce of the association, has sent out to members a questionnaire asking them to report what method they now use in making corrections.

Mr. Lyons points out that the association has approved the A. S. T. M. so called "abridged table" which was worked out by the Bureau of Standards and which is officially called Supplement to Circular 154, abridged volume correction table for petroleum oils. The abridged table can be obtained for 5 cents from the superintendent of documents, government printing office, Washington, D. C.

The abridged table probably will answer all the requirements, Mr. Lyons says, and if so members will have to use but four coefficients of expansion, .0004, .0005, .0006 and .0007. Where greater accuracy is required, the unabridged table should be used, which is obtainable from the same source for 30 cents.

"OUR attention has been called to the fact that members of the association do not use a uniform method," says Mr. Lyons. "It will promote better trade relations if all of our members do use the same method for temperature correction. In order that this department may have information as to present practice, please fill out the enclosed questionnaire and return promptly to me."

At the same time Mr. Lyons reported that the board of trustees of the association has affirmed the appointment of councillors and group chairmen for the department of trade and commerce. The councillors of the department for the current year are:

D. J. Cavanaugh, Pennzoil Co., Oil City; Myron Evans, Island Petroleum Co., Pittsburgh; James Lewis, Bradford Oil Refining Co., Bradford; Harry P. Schmidt, United Refining Co., Warren and G. G. Woodruff, Roxana Petroleum Corp., St. Louis.

James Lewis is chairman of the Bradford group; Harry P. Schmidt of the Warren group; D. J. Cavanaugh of the Oil City group; Wayne K. Glenn, Pennsylvania Refining Co., of the Butler group; Earle Craig, Freedom Oil Works, of the Pittsburgh group; M. G. Benedict, Fred G. Clark Co., Cleveland, of the Ohio group; W. W. McKee, Elk Refining Co., Charleston, W. Va., of the West Virginia-Kentucky group; G. G. Woodruff of the Illinois-Indiana group and J. S. Cordell, Cities Service Refining Co., Boston, of the New York City-Philadelphia-New England group.

Correction

Prices of Oklahoma and North Texas Grade C natural gasoline in the refinery market table at the back of this issue, in the Jan. 24 column, should be 6 to 6¼ cents, instead of 6¼ cents flat. Information which indicated that the price was 6 to 6¼ cents arrived too late to insert into the table.

Correction

Gasoline prices at Norfolk, Neb., were reduced 1 cent on Jan. 20 by Standard Oil Co. of Nebraska, to 18 cents tank wagon, and 20 cents service station, including 2 cent state tax. These prices are not shown in the tank wagon table at the back of this issue, but will be corrected in the Feb. 2 issue.

SOUTH BEND, IND.—A service station handling Sinclair products has been opened here by McCabe & Gross.

Marland Drew Bill as Target for Debate, Changes in Text Expected

CLEVELAND, Jan. 25

E. W. MARLAND, president of the Marland Oil Co., has not yet introduced into the Oklahoma legislature his bill to eliminate gas waste, and to provide a means for curtailing production in flush oil pools, by forcing all operators to hold back-pressure on their wells.

In fact, Mr. Marland's representatives have brought out that he does not expect his bill to become law as it has been drawn, in fact is not desirous of having it become law in that form.

He has prepared it a basis of procedure, and discussion, as something tangible along the line he believes the oil industry needs and expects many changes and amendments proposed when the bill is finally introduced into the state legislature.

Making public the provisions of the proposed bill has already brought about one object the author had in mind in having it framed—formal and informal debate and discussion on the subject.

Formal discussion, but no vote as to approval or disapproval of the bill, took place at the regular weekly meeting of the Okmulgee District Oil & Gas Assoc., Okmulgee, Okla., Jan. 22. Representatives appearing for Mr. Marland explained the bill.

On Jan. 25 directors of the Chamber of Mines and Oil of California were to meet at Los Angeles to consider the Marland bill, since Mr. Marland stated a week ago that a bill to prevent gas waste would likely be introduced into the California legislature before March 1. Leading oil producing companies in this state have already, on their own initiative, taken some of the steps the Marland bill advocates to conserve the gas in the ground in oil pools.

THE executive committee of the Kansas Oklahoma division of the Mid-Continent Oil & Gas Assoc. has called a meeting for Jan. 28 to discuss the bill. Copies have been sent to the membership of the association in Oklahoma and Kansas for their study and consideration.

The next move of the American Petroleum Institute in the matter is to hold a meeting of its executive committee with its Committee of Seven on Gas Waste, of which Mr. Marland was chairman. This latter committee was appomted at the Tulsa institute meeting in December to consider the advisability of asking state legislation to prevent loss of gas from oil pools by holding back-pressures on wells. The committee has approved the principle of asking each oil producing state to handle the matter by legislation; but it has not approved the Marland bill for Oklahoma. Directors of the institute have been asked to submit their views on the subject of conserving gas by legislation to the executive committee.

Nothing has been heard yet as to plans to introduce this or a similar bill in the legislature of any other oil producing state, as Mr. Marland told Secretary of the Interior Work at Washington a week ago would likely be done.

SECRETARY WORK and other members of the Federal Oil Conservation Board at Washington are keenly interested in the course of legislation on this subject of holding the gas in the ground, since it was proposed by the board in its report to President Coolidge as a practical step in conservation.

Some surprise has been felt in Washington at the lack of response to Mr. Marland's proposal from politicians and newspapers of the country. His proposed bill is but little known outside the government bureaus which are active in petroleum work.

Being a proposition for the introduction of government into business, through calling on the state to say what amount of gas could or could not be taken from a man's private property by a private institution, an oil company, it was believed Mr. Marland's bill would attract considerable attention. The technical nature of his proposal and the fact its effect as a means of curtailing oil production is but little understood outside the oil industry is believed to be the reason for the small general interest this proposed bill has aroused.

The first public discussion in Oklahoma of the bill occurred Jan. 22 at the regular weekly meeting of the Okmulgee District Oil & Gas Association. Sixty-five or 70 members and others, meeting in the Parkinson Hotel, at Okmulgee, heard the bill read and several talks, pro and con, but mostly pro, were made.

There were three principal speakers, Judge D. A. Richardson, of Oklahoma City; C. C. Brown, of Ponca City and State Representative David M. Logan, of Okmulgee. Judge Richardson is a member of a law firm among whose clients is the Marland Oil Co.; C. C. Brown is president of the Kay County Gas Co., Marland subsidiary and a vice-president of the Marland Oil Co.; Representative Logan is chairman of the oil and gas committee of the lower house of the present Oklahoma legislature.

JUDGE RICHARDSON assisted in drawing up the bill. He told the Okmulgee District meeting that it was never intended to present the bill as a model plan for producing oil and gas, although such conclusions had been reached by some commentators. It was drawn in its present form to serve as the basis for legislation to the end that gas wastage might be stopped and more efficient and greater recovery of oil attained.

In its present form, the bill would not stand the test of the courts in all its parts, Judge Richardson said. He mentioned specifically the section providing for payment of oil and gas supervisors' salaries out of fees collected from operators for permits to drill, to plug and for annual inspection of wells. Such payment, he said, would be contrary to present Oklahoma laws.

The result sought by Mr. Marland in taking his present stand on the subject of gas conservation is wholly desirable, Judge Richardson said, but no one pretends that the draft of the bill that has been circulated is the final word on methods of achieving such result.

MR. BROWN emphasized the contentions of Judge Richardson and urged that the bill be considered as a basis for procedure. He asked that the association withhold formal action on the measure until the members had studied it carefully. Constructive criticism and betterment are solicited, he said, but he urged that consideration be given the proposal at once, for admittedly the present system which permits gas to be wasted or produced without doing its most effective work in recovering oil, needs correcting in the speediest possible time.

Representative Logan also asked that the association members give careful thought to the bill and be prepared to join in the discussion before his committee when the bill comes before it for recommendation.

Basis of Issue Explained

THE nature and effect of natural gas in the ground dissolved in the oil—in reality the basis of the entire present conservation issue—is gone into in great detail in the article in the Uren series in this issue, starting on Page 71. This is the second article in a new series on improved production practice being written exclusively for National Petroleum News by Lester C. Uren, professor of petroleum engineering, University of California, Berkeley, Cal.

Combing of Ranger District Opens Field Southwest of Eastland

HOUSTON, Jan. 22

THE combing of old districts for new producing areas inside or adjacent to earlier development lines, often yields profitable results. In spotted districts like the general Ranger territory rich spots of production are sometimes found under such conditions. This is especially true when it has been possible to apply geological knowledge, or indications, based on findings disclosed in earlier general development.

The above methods describe how a new pool in the Ranger black lime producing territory has been opened by Thomas & Reynolds and the Amerada Petroleum Corp., on T. H. B. McCallister land, sec. 16, H&TC block 3, East land county. The well was maintaining a flow of 40 barrels an hour, by heads, at the end of the week, in lime pay at 2983-3049 feet, after 200 quart shot of Nitro-glycerin.

The pay is being correlated with the producing horizon in that part of Ranger territory around the towns of Ranger and Eastland. It is found in the Marble Falls limestone series beds, which produce from upper, middle and lower divisions in different parts of the general territory

The new well is 12 miles southwest of the town of Eastland and fully 20 miles due west of the Desdemona field, on the Comanche-Eastland county boundary. It provides a link in the chain of lime pay production which extends northeasterly from the old Pioneer pool, in extreme southwestern Eastland county, back through parts of Eastland, Stephens and Palo Pinto counties. The sandy lime pay in the new well is also described in first reports from the field as similar to the producing horizon at Pioneer, where the development area was small but town lot drilling brought the pool to maximum daily average production of about 25,000 barrels.

FOUR miles southwest of the present discovery on the Morgan farm, Lavaca school land survey, Independent Oil & Gas Co., some time ago completed a lime pay well good at first for 400 barrels daily after a shot. That well is still producing about 100 barrels daily. It is doubted whether the area intervening between the McCallister and Morgan wells will connect up for production, but activity has been materially quickened by results obtained in the two completions.

Thomas & Reynolds, Independent operators of Fort Worth, which partnership includes J. Elmer Thomas, consulting geologist, originally took up the acreage block on which the McCallister well was completed. They interested the Amerada in drilling a test and still hold a 50 per cent interest in the well. Other companies buying protection acreage included Tidal Oil Co., Skelly Oil Co., Marland Oil Co. of Texas, Simms Oil Co., Humble Oil & Refining Co., and Roxana Petroleum Corp.

Besides stimulating interest in the area adjacent to the McCallister and Morgan wells, the Amerada-Thomas & Reynolds completion will encourage further combing of the General Ranger territory for rich spots having similar possibilities.

Oil Worker Killed by Blast

OKLAHOMA CITY, Jan. 21.—R. M. Denny, warehouseman for the Sloana-Frosberg Oil Co. here was fatally burned in a fire at the warehouse Jan. 19. The blaze was caused by an explosion of undetermined origin. Denny was 57 years old. He is survived by his widow and two daughters.

Firemen prevented flames from spreadng to two tankcars of gasoline nearby. The company's officials estimated the damage to the building at $5,000.

Index To Coming Meetings

Iowa Independent Oil Men's Association, Fort Des Moines Hotel, Des Moines, Ia., Feb. 2, 3.

North Dakota Petroleum Association, Waldorf Hotel, Fargo, N. D., Feb. 3, 4.

Michigan Independent Oil Men's Association, Detroit, Feb. 10, 11.

Illinois Petroleum Marketers' Association, Hotel Abraham Lincoln, Springfield, Ill., Feb. 16, 17.

Ohio Petroleum Marketers Association, Neil House, Columbus, O., Feb. 17, 18.

Ohio Gas & Oil Men's Association, Elks Home, Columbus, O., Mar. 1, 2.

Minnesota Petroleum Association, Hotel Radisson, Minneapolis, Mar. 3, 4.

National Petroleum Marketers Association, Congress Hotel, March 8, 9, 10.

American Oil Burner Association, Broadway Auditorium, Buffalo, N. Y., Apr. 5, 6, 7.

American Oil Men's Association, Congress Hotel, Chicago, Apr. 12, 13, 14.

National Petroleum Association, Riverside hotel, Cambridge Springs, Pa., April 28, 29.

Panhandle Production Slightly Higher

TULSA, Jan. 22.—A slight increase in production in the Panhandle district of Texas was the feature of a week unattended by outstanding developments.

Drilling maintains a brisk pace with the Phillips Petroleum Co. leading in new work started. The past two weeks the company started 40 new wells, practically all in proven territory and designed to hold output to the figure required to meet contracts for crude oil.

The company also is increasing its natural gasoline plant capacities. Five units are being added to each of two plants, bringing them to 27-unit size each and two new plants are being installed, these being a 27-unit plant in Sec. 21, Block Y and a 16-unit plant in Sec. 26, Block 47, H. & T. C. Survey.

The company is selling about 30 million feet of residue gas daily to carbon black plants, the yield from which is reported to be one and one-fourth pounds to the thousand feet. When the new units are installed, the Phillips sales of residue gas to black plants will be practically double present figures.

A good producer was drilled in by the Gibson Oil Co., its No. 1 Bentley, Sec. 42, Block 24 H. & G. N. Survey, Wheeler county. It was originally completed as a gas well at 2265 feet but was deepened to 2339 feet with a showing of oil in the last two feet. The showing was small because the hole had been filled with water to kill the gas. When the water was swabbed out the well started flowing at the rate of 83 barrels an hour.

The number of producing wells and daily production for the week ending Jan. 19 was as follows:

County	Wells	Prod.
Carson	71	5,052
Gray	96	9,439
Hutchinson	683	123,175
Potter	1	35
Wheeler	13	1,438
	864	139,139

Increase 33 wells; 872 barrels. Hutchinson county gained 19 wells and lost 1,321 barrels.

Primrose Installs Pipe Still

WICHITA FALLS, Jan. 24.—The Primrose Refining Co. is installing a new pipe still at its refinery here. The new still will have a capacity of 1500 barrels per day. It is connected up with a 65-foot bubble tower designed to take off six cuts from raw crude charged to the still. The tower and still were designed and installed by the Widdell Engineering Co.

New Pipe Still Increases Gasoline Yield At Texas Refinery 5 Per Cent

By J. C. Chatfield
N. P. N. Staff Writer

WICHITA FALLS, Jan. 24 A REMARKABLE increase in gasoline yield has been obtained by the Panhandle Refining Co. here by the installation of a 2500-barrel pipe still used in reducing topped crude. The new equipment likewise has been useful in preparing a high grade cracking stock for the company's two Dubbs cracking stills.

Running on average north Texas crude, the Panhandle plant was obtaining a yield of from 51 to 52 per cent gasoline by skimming and cracking prior to the installation of the tube still.

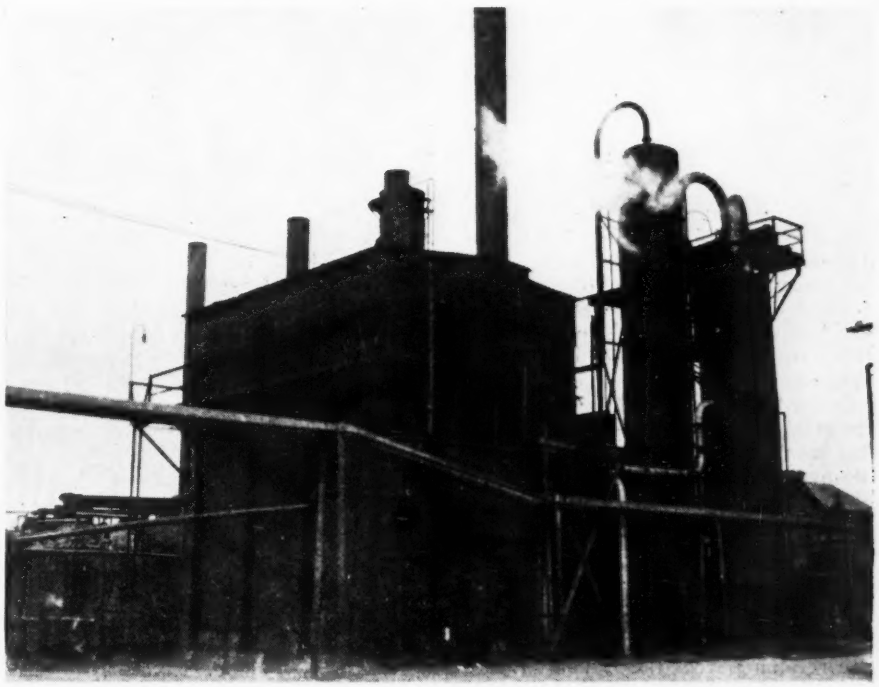
Since it has been put in service the overall production of gasoline from the entire plant jumped up to 57 per cent for the entire month of December. Plant operators are of the opinion that finally corrected reports for January will show an even larger gain in gasoline production as a result of certain changes in the methods of operation.

The Panhandle pipe still is of new design by the M. W. Kellogg Co., incorporating a number of new ideas in the construction of such apparatus. The still was put into service on the first of November and has been continuously in use since that time except for normal intervals to clean out tubes.

One feature of the still is the fact that it utilizes both radiant heat and the heat of convection. The furnace is lined on all sides and the top with tubes in addition to the usual banks of tubes below the shoulder of the furnace in the path of the downflow of hot gases on their way to the stack.

In the past one objection to the utilization of radiant heat in tube stills has been the fact that it can be applied to only one side of the pipes. If applied to the bottom, excessive coking and hot spots have been somewhat troubesome. Since the Panhandle furnace has tubes lining the walls, the radiant heat is applied to the sides of the tubes rather than the bottoms. It is only on the roof tubes that the radiant heat is applied to bottom.

AN additional feature of the furnace is the fact that the operators have shielded the tubes from the most intense effect of radiant heat by a curtain of recirculated flue gases. A motor driven fan pulls a draft on the furnace and forces a portion of the gases through a series of slots near the bottom of each side of the furnace. These hot gases rise through the furnace in a sheet, aiding both in fuel economy and in preventing too great an application of radiant heat on the tubes.



Fipe still for reducing topped crude at Panhandle Refining Co., Wichita Falls, Texas

The still contains 5287 feet of 4-inch O. D. standard steel tubes installed to conduct a single stream through the still. Recirculation of hot still gases is accomplished by means of an American paddle wheel type fan operated by a 10 H. P. constant speed motor.

Liquid from the still is charged into a 6 by 38 foot vaporizer where pressure is released. Fuel oil residuum is withdrawn from the bottom of this vaporizer to storage and vapors are conducted to a 7 by 35.5 foot bubble tower fitted with 12 trays and a reflux condenser. Gas oil is drawn off from the bottom of this tower to run to the cracking plant after giving up its heat to raw crude for the shell stills in an exchanger.

The No. 2 tower is 6 by 47 feet in size with 18 bubble trays. Kerosene distillate is withdrawn from the bottom of this tower and benzine is taken off of the top in vapor form and condensed. A part of the cold benzine is sprayed back over the top of this tower to aid in fractionation.

TOPPED crude for the pipe still is pumped directly from the final shell still of the crude battery. It enters the pipe still at about 520 degrees F. on the average. A pump pressure of 225 pounds per square inch is utilized to overcome friction in the tubes and push the oil through the pipe still at a desirable velocity. Discharge pressure from the still is 175 pounds per square inch.

The topped crude enters the pipe still through a series of two banks of tubes counter current to the hot furnace gases. From these banks it passes to the bottom of the furnace proper and is pumped upward in a spiral stream to the top of the furnace. It enters the wall bank at about 625 degrees F. and is raised to between 790 and 800 by the time it reaches the roof bank.

FROM this point on the oil maintains approximately an even temperature, going into the final bank past the furnace shoulder at about 830 degrees. It leaves the still at about 840 degrees.

The furnace is equipped with an economizer which preheats the air to about 480 degrees F. and robs flue gases of their heat down to an average of about 460 degrees F. The temperature of hot gases just past the furnace shoulder above the tube bank averages about 1150 degrees F.

The topped crude pumped to the pipe still has an average gravity of about 26 dx Be. A recent distillation of the topped crude taken from the hot stream showed an initial boiling point of 470 degrees F., 5 percent over at 500, 10 percent at 511, 20 percent at 550, 30 percent at 600, 40 percent at 652, 50 percent at 679, 60 percent at 696, 70 percent at 700, 80 percent at 690, 90 percent at 645. The

maximum temperature was reached at the 70 percent point of 700 degrees F.

The above sample was taken hot. Others taken on cooled topped crude have shown a somewhat lower initial. The final stream taken from a bubble tower on the last shell still has an end point of 430 degrees F. under normal operating practice.

ON the same date that the above mentioned sample of topped crude was essayed, a sample of the synthetic crude from the pipe still taken at a temperature of 830 degrees F. showed a gravity of 29.4 degrees A. P. I. The initial boiling point of the synthetic crude was 160 degrees F., 5 percent over at 386, 10 percent over at 448, 20 percent at 500, 30 percent at 530, 40 percent at 570, 50 percent at 618, 60 percent at 675, 70 percent at 700, 80 percent at 706, and 90 percent at 660 degrees F. The above was a composite sample of four streams of which benzine represented 10.3 percent, kerosene distillate 16.2 percent, gas oil 54.5 percent and fuel oil 19 percent.

The above described composite stream is that which is released in the vaporizer at about the center of the column. This vaporizer contains five baffle plates. The average temperature at the top of this vaporizer is about 750 degrees F. while that of the fuel oil being withdrawn from the bottom is around 700 degrees F.

Fuel oil made is about 12 to 14 gravity but does not contain asphaltic or carbon particles in suspension and mixes well with residuum from the Dubbs units to make a readily salable fuel oil of about 16 gravity. The fact that gas oil instead of reduced crude is used as charging stock for the Dubbs units makes a thin residuum and avoids much fuel oil difficulty. The fuel drawn from pipe still vaporizer showed an initial boiling point of 552 degrees F. with 5 percent over at 606 degrees on a recent test.

With the fuel oil removed, the vapor stream leaving the vaporizer at a temperature of 740 degrees F. was tested and found to have a gravity of 34.1 Be., an initial boiling point of 145 degrees F., 5 percent over 350, 10 percent at 426, 20 percent at 461, 30 percent at 505, 40 percent at 536, 50 percent at 573, 60 percent at 616, 80 percent at 705 and 90 percent at 708. The stream was a composite of 12.7 percent benzine, 20.1 percent kerosene distillate and 67.2 percent gas oil.

GAS oil is separated from the vapor stream in Bubble tower No. 1 in which an average temperature of 405 degrees F. is maintained over the reflux condenser in the top of the column. The gas oil is drawn off at a temperature of about 470 degrees F.

A recent test of this gas oil showed it to have a gravity of 29.3 degrees A. P. I., an initial of 505 degrees F., 5 percent over at 543, 10 percent at 552 and 90 percent at 680 degrees F.

Kerosene distillate is withdrawn from the bottom of the No. 2 Bubble tower at an average temperature of 360 degrees F. having a gravity of 39 A. P. I. and above. A recent test showed a gravity of 39.6

W. F. SIMS
Plant Manager, Panhandle Refining Co., Wichita Falls, Texas

initial boiling point of 418, 5 percent over at 437, 10 percent at 443, 20 percent at 448, 30 percent at 454, 40 percent at 458, 50 percent at 462, 60 percent at 466, 70 percent at 473, 80 percent at 480, 90 percent at 492, 95 percent at 506 and an end point of 520 degrees F. There was a distillation loss of 1 percent and a residue of 1 percent.

From the top of the column the benzine vapor is conducted to a condenser at about 350 degrees F. A test of this benzine showed a gravity of 53.9 initial boiling point of 104, 5 percent over at 144, 10 percent at 180, 20 percent at 228, 30 percent at 263, 40 percent at 296, 50 percent at 329, 60 percent at 358, 70 percent at 380, 80 percent at 400, 90 percent at 419 and an end point of 436 degrees F. The recovery was 97 percent. There was a loss of 2 percent and a 1 percent residue. This product is rerun for color in combination with Dubbs pressure distillate.

During December the Panhandle charged 56,074.92 barrels of topped crude to the pipe still with the following yields:

	Percent
Benzine	8.41
Kerosene distillate	13.56
Gas Oil	54.88
Fuel Oil	20.74
Loss	2.41

Dr. M. P. Cullinan, Famed Gas Blowout Fighter, Dies

Staff Special

HOUSTON, Jan. 21

DR. M. P. CULLINAN, president of the Border Gas Co., and a leader in southwest Texas development, died at his home in Laredo, Jan. 20, a few hours after celebrating his 62nd birthday anniversary. Accute indigestion resulted in death before medical aid could reach him. Following the birthday dinner at his home, Dr. and Mrs. Cullinan had visited a son, Joseph Cullinan, until about midnight. The doctor apparently was in good health at the time of retiring, but became suddenly ill a few hours later.

Dr. Cullinan, who was born in Shamburg, Pa., in 1865, was a practicing physician in Pennsylvania until he suffered a fractured leg and came to Texas in 1898. He then became interested in oil and gas development at Corsicana, where his brother, Joseph Cullinan, now of Houston, operated as the Corsicana Oil & Refining Co., predecessor of the Magnolia Petroleum Co. Dr. Cullinan moved to Laredo in 1910 to become president of the Border Gas Co., subsidiary of The Texas Co., of which Joseph Cullinan was then president.

Visitors to the Laredo territory who had not previously known Dr. Cullinan were invariably impressed by the sight of a kindly appearing old gentleman, with a white goatee, carrying a crutch and driving a Ford coupe. He was a familiar figure throughout the territory, where his activity in fighting gas blowouts won him widespread reputation. Dr. Cullinan believed every "wild" well could be saved, if those fighting the blowout persevered, although he recognized that no two gassers ever presented identical problems. He always used his own crew in fighting gas blowouts and never would accept pay for the work of himself and his men.

Dr. Cullinan was recognized as one of the best informed men in the southwest on the geology of Texas south of San Antonio. He is survived by his widow, three sons, Joseph Cullinan and Frank Cullinan, Laredo business men, and Murta Cullinan, Notre Dame student; two brothers, Joseph Cullinan of Houston, president of the American Republics Corp., and subsidiary companies, and Frank Cullinan of Dallas, vice president of the Republic Production Co. He has four sisters residing in Washington, D. C., and Pennsylvania.

Calpet Rechristens Tanker

LOS ANGELES, Jan. 22.—The tanker, Cape Cod, capacity 85,000 barrels, was rechristened the Emma H. Coppage Jan. 22 at Los Angeles harbor celebrating the taking over the vessel by the California Petroleum Corp. Mrs. Charles Lyndon Coppage was the sponsor. This gives the California Petroleum a fleet of five tankers, all of about the same capacity. The new tanker will ply between Los Angeles, and Seattle, Chile and the Orient.

Oklahoma Jobbers "Pep Up" Annual Meeting With a Little Play

By A. S. James
N. P. N. STAFF WRITER

OKLAHOMA CITY, Jan. 21

AT the mid-summer meeting of the Oklahoma Oil Jobbers Association here last July several members expressed dissatisfaction over the seeming lack of interest many other members took in the gatherings of the organization. They argued for more "pep" in the program. "All work and no play makes a dull convention," they said.

The upshot of the arguments was the issuance of instructions to the program committee to make the January meeting one of work and play, with invitations to the wives of members to come along and enjoy the first two-day session attempted by the association.

As a result the convention which closed this afternoon has been put down as by far the best meeting the association has ever held. There were more than 100 registrations, the business sessions were instructive and the entertainments were all that could be desired. There wasn't a dull minute during the two days. The banquet and dance topped the entertainment features.

R. C. Holt, R. C. Holt Oil Co., Altus, was elected president, and C. M. Kinney, assistant secretary was elected secretary, general manager and treasurer. The new directors are Pat Henry, Pat Henry Oil Co., Oklahoma City, who succeeds Hugo Hovel, Cities Service Co., Tulsa; Earl Graham, N. A. Graham Distributing Co., Okmulgee, who succeeds "Jack" Sloane of Sloane-Frosberg Co., Oklahoma City, and Mr. Holt, who was re-elected.

The convention opened Thursday morning with the election of directors. Several minor changes were made in the by-laws. A luncheon was served in the dungeon of the Huckins hotel. While the luncheon was being served, L. A. Warren, Eaton Oil Co., Enid, called attention to the various supply exhibits around the room. This was the first time the association has permitted exhibits.

SPEAKERS at the afternoon session were Dr. Charles K. Francis, chief technologist for the Skelly Oil Co., H. J. Scott, sales manager of the Transcontinental Oil Co., and A. W. Lee of the Oklahoma Lubricating Co. J. R. Weldon, president Weldon Oil Co., Enid, presided.

Dr. Francis related the history of the petroleum industry with special emphasis on changes in gasoline specifications, improved methods of refining, and the responsibility of the jobber to keep abreast of those changes.

R. C. HOLT
of the Holt Oil Co., Altus, Okla., new president of the Oklahoma Oil Jobbers Assn.

"Co-operation, friendship and the ready exchange of ideas have done more for the industry than any other combination of factors," Dr. Francis said.

Mr. Scott's topic was "The Relation of the Refiner to the Marketer and Jobber." The jobber must be able to depend on his source of supply, Mr. Scott said. This not only meant dependence on receiving goods promptly, but in receiving the highest quality. On the other hand refiners must be able to depend on his jobber and marketer customers. He cannot hope to succeed if he sells his product to a customer who will not help him to maintain a good reputation for the product. All in all, the refiner and jobber must work with an inter-dependent idea in mind if they hope to maintain the most satisfactory relationships.

"ATTEND to your own business and let the other fellow alone," was the main point Mr. Lee put before the meeting. He said this policy, in his opinion, would eliminate a lot of petty grief. "The small man cannot hope to crush the big fellow, and the big one should not try to crush the small one," he declared. Another point stressed was that "honesty and service bring far better returns now than ever before." He declared that one centrally located service station, efficiently handled and kept in spick-span order, will do more business than four or five stations scattered throughout the city where the service is not of the best.

For the success of the banquet and dance Thursday evening considerable credit goes to Mr. Sloane, B. W. Fitzgerald, Oklahoma district manager of the Pierce Petroleum Corp., and Mr. Kinney, who comprised the entertainment committee.

Music was furnished by an excellent orchestra. Special entertainment features included solos and readings. Immediately after the banquet the room was cleared of tables and several special dances given by Oklahoma City artists. A ball followed.

RESULTS of the election of officers by the board of directors was announced at the Friday morning sessions. R. A. Moore, lubrication sales division, Skelly Oil Co. discussed various phases of the lubricating oil business and explained methods of handling the products and promoting sales.

Mr. Warren, who is a past president of the association and one of the leaders in the organization since it was formed, made an impressive talk on the value of co-operation.

"Co-operation is teamwork, and it begins at home," he declared. "There have been more filling station men on the rocks in the last five years than at any other period, and much of their failure was due to lack of teamwork. The lack of co-operation is the biggest bugbear in the Oklahoma situation."

Mr. Warren declared that he didn't think any independent jobber could set the price, but that the larger companies that did set the price, would not set a price which was unreasonable unless forced to do so by the ignorant operations of some of the independents, and a price war had never benefited a community.

D. W. Moffitt, vice-president, Mid-Continent Petroleum Corp., was unable to appear due to illness in his family, but his paper was read by F. E. Heckethorne, Ardmore. Mr. Moffitt analized the relationship of the refiner and jobber over the period of the refining industry, and the margins which the refiners have accepted as compared with those the jobbers have received during that period. The paper was read by Mr. Moffitt at the American Oil Men's Association at Chicago in November, and was carried in full on pages 76 and 77 in the Dec. 1 issue of National Petroleum News.

A luncheon Friday noon concluded the convention. Several Shrine candidates were to tread the burning sands that afternoon and many of the association members who also were Shriners, went directly from the luncheon to the Temple to participate.

S. O. Indiana Allows 1 Cent Off On 50-Gallon Q. D. A. Dumps

Staff Special
CHICAGO, Jan. 21.

WHEN Standard Oil Co. of Indiana on Jan. 19 revised its tank wagon schedule of quantity discount agreements it created considerable speculation among the Independent jobbers in this territory who will be obliged to meet the competition.

Many jobbers did not know just what to make of it because the Standard simply stated that a 1-cent reduction to buyers of 50-gallon lots would be allowed at the time of delivery and that the arrangement would supplant the first three brackets of the wholesale Q.D.A.

The Q.D.A. schedule previously in effect allowed a reduction of ½ cent a gallon to contract buyers of 750 gallons a month or more; ¾ cent to buyers of 2000 gallons a month or more; 1 cent to buyers of 3000 gallons or more; 1½ cents to buyers of 6000 gallons or more, and 2 cents to buyers of 10,000 gallons or more. All of these concessions were exclusively for contract customers.

The new arrangement allows 1 cent to everybody who takes 50 gallons at a dump, whether contract customers or not. So obviously, contract customers of the first three classes get their 1 cent cut at the time of delivery and they do not care to worry with the contracts. If they had a credit account before, they can still have credit, and if they were not enjoying credit before they can get the discount any way by paying cash. Thus the 750-gallon, 2000-gallon and 3000-gallon brackets are automatically voided.

BUT the 6000-gallon bracket and the 10,000-gallon bracket remain in force. Such buyers whether consumers or reselling agencies) all receive deliveries larger than 50 gallons at a time and are entitled to the 1-cent discount at time of delivery, but that is not in addition to their Q.D.A. discounts. At the end of the month a 6000-gallon customer who is entitled to 1½ cents a gallon off, has only ½ cent a gallon coming to him. The 10,000-gallon buyer likewise has only 1 cent more a gallon coming.

There were two exceptions in the new ruling. It does not apply in Chicago or in Kansas for quantity delivery concessions already were in effect in both places. In short, the old Kansas ruling is in force now all over the territory except in Chicago where 100-gallon dumps are required instead of 50-gallon dumps for the minimum discount.

The revision does not affect the filling station price nor the retail Q.D.A. Both remain just as they were. But the margin is made wider for small resale agents by ¼ to ½ cent a gallon. Consumers who buy as much as a barrel at a time get 1 cent off the tank wagon price. This includes most farmers who regularly have one or two drums for gasoline storage mounted on a frame in the barn lot.

The reduction applies to all 50-gallon tank wagon deliveries, whether the normal price schedule is in force or not. No matter if the community is in a price war and the tank wagon price is unusually low, the discount is made off the actual tank wagon price in that community.

Hope Held for Higher Priced Ohio Crude

LOGAN, O., Jan. 21.—Hope but not a promise that Ohio crude of Pennsylvania grade would again be placed on a parity with Pennsylvania grade crude from Pennsylvania, has been extended by L. W. Young, Jr., president, South Penn Oil Co., chief purchaser of this Ohio crude, A. E. Faine, producer of New Straitsville, O., told the Southeastern Ohio Oil and Gas Producers' Association at their meeting a few days ago at Newark.

A committee of the Association recently called on Mr. Young in Pittsburgh and asked for relief from the present price differential of 20 cents a barrel under the Pennsylvania oil and 15 cents under West Virginia oil of Pennsylvania grade. Mr. Faine said Mr. Young admitted the price paid for Ohio oil was below the cost of production but that the market for Ohio oil on the Atlantic seaboard had been lost and West Virginia and Pennsylvania refiners had to take the oil and that they found fault with its color.

Changes in pipe line practices had eliminated the color objection, Mr. Faine said Mr. Young told the committee, and that some changes in refining methods being made by the Appalachian refiners might tend to remove the differential. Mr. Faine emphasized that no definite promise was made.

Mr. Faine presented statistics on Ohio, West Virginia and Pennsylvania production for the seven years 1919 to 1925, inclusive. The statistics were the same as were prepared for and submitted to the Interstate Commerce Commission examiner at the Pittsburgh rate hearing Jan. 5. (See N. P. N. Jan. 12, 1927, page 31). He concluded by saying there was a profit in the oil industry but the producer was not getting his share of it. He demanded that the producer get his fair share even though he should have to transport and refine his crude and market the products.

George White, Marietta, former Congressman and former chairman of the Democratic national committee, said quarrels and not cooperation had characterized the oil producers and that they needed organization. He asserted he was opposed to paternalism and the Haugen agriculture bill in particular but if Congress should give the farmers a bonus for wheat when there was overproduction oil producers and coal operators were entitled to the same consideration when they suffered from overproduction. He said he was opposed to oil being on the free list although as a Democrat he stood for free trade.

F. H. Ward, Woodsfield, oil producer and Democratic floor leader of the House in the Ohio General Assembly, said he believed the producers would have to enter the refining division unless they receive a higher price for their crude. He said he was opposed to further taxation of the industry and recommended organization of the industry to get a square deal.

A round table discussion was joined in by E. J. Mildren, Marietta; Dr. J. G. Shirer, Newark; Mr. Mooney, Woodsfield; Robert Daily, New Lexington, and Ed Dennan, Lancaster, W. L. Franks, Logan, said 50 producers joined the association after the meeting.

Bureau May Study Oil Divining Methods

WASHINGTON, Jan. 24.—Senator Oddie of Nevada, practical mining man, proposes the government spend $25,000 making a scientific investigation of methods and devices based on gravitational, seismic, electrical, geothermal, radioactive and other phenomena for sub-surface prospecting for minerals and other valuable substances, including oil. He has introduced Bill, S. 5329, appropriating that amount to be used by the Bureau of Mines.

In support of his bill the Senator said that the engineers in the Bureau of Mines had been following developments in this field with great interest, but that the Bureau had been prevented, by lack of funds, from undertaking an exhaustive study of the geophysical methods and devices and publishing a report thereon.

Engineers engaged in actual field work, he pointed out, were interested in some particular method or device, and therefore partisan, each thinking his device or method the best. He said the mining industries required definite information on the subject and that therefore he had introduced the bill. He said a five-year program should be laid out and $25,000 a year spent on it. He said results from work already done warranted expenditure on behalf of the oil and mining industries generally.

Industrial Petroleum Elects

CHICAGO, Jan. 21.—At the annual meeting of the directors of the Industrial Petroleum Corp., Chicago, recently George F. Phoenix, secretary, was elected vice-president succeeding J. H. Campbell, who resigned recently, and George J. Milady was elected secretary. T. P. Collins, president, and J. F. Cahill, treasurer, were re-elected.

Visitors to West Texas Petroleum Convention See Area's Growth

By Paul Wagner
N. P. N. Staff Writer

HOUSTON, Jan. 22.

A YEAR and a half ago, when the West Texas Petroleum Club held its first convention at San Angelo, the Big Lake field was at its height of development, and two other plains country pools were in the making. Wildcatting was proceeding in all directions from the World pool, in northern Crockett county, and the Hurdle district, along the Upton-Crane county boundary, where discovery wells had just been completed.

The second convention at San Angelo, Jan. 20-21, found at least four additional oil fields in the making in territory underlain by an old Permian age salt basin that once covered West Texas. Every one of these prospective areas, already past the discovery stage, bore promise of equalling or exceeding the best of the two fields that were in the making a year and a half ago.

New plains country fields, with their future still ahead of them, include the McElroy ranch development area, 12 miles north of the Hurdle district proper, where a half dozen wells of the Gulf Production Co. are now yielding about 11,000 barrels of crude daily; the University (Church & Fields) pool; eight miles northwest of McElroy development, where a few small wells have been on production since the middle of last year; the Winkler county area adjacent to sec. 42, block 5, survey 41, where Southern Crude Oil Purchasing Co. is drilling acreage acquired from Westbrook et al; and the Yates ranch pool, in eastern Pecos county, where Mid-Kansas Oil & Gas Co., and Transcontinental Oil Co. completed a shallow sand discovery in sec. 60, block 1, I&GN survey.

IT is proper to say also, that non-commercial oil showings found in tests drilled elsewhere in the salt basin area have encouraged widely flung wildcatting operations in all directions from these comparatively new development areas.

Reverting to history it will be recalled that the World pool, in northern Crockett county, about 15 miles south of Big Lake, failed ever to exceed 3,000 barrels daily production. It is along the southern rim of the salt basin and the pay was found at above-sea-level depths. The Hurdle district proper, which recently reached its peak yield of around 25,000 barrels daily, also produces at above-sea-level depths along the rim of the basin.

The McElroy ranch field, owned in its entirety by the Gulf, is on a structural high out in the basin, in this respect resembling the Big Lake field. Another similarity is in the acreage control. When the Gulf's discovery well was completed a few months ago the company bought the leaseholds within the boundaries of its block that had been previously reserved by W. H. Dunning, drilling contractor of Fort Worth, who originally assembled the acreage and turned most of it to the Gulf. The Big Lake field has always been under development control of two interests, the Big Lake Oil Co., and the Texon-Group 1 combination.

Had Big Lake been developed under conditions of extensive field competition it has been estimated the area would have produced as much as 150,000 barrels of crude oil daily. The ultimate recovery of the field has been estimated in competent quarters at fully 100,000,000 barrels of crude. Many competent observers believe the Gulf's McElroy ranch field will cover an even greater producing area than Big Lake. Initial productions are high in both fields and decline rates similar, hence the development of a larger producing area in the McElroy ranch field than at Big Lake would increase the ultimate yields to be expected from the first mentioned.

The handful of small wells in the University pool of Crane county may be compared with the original completions in the Hurdle district proper; the Winkler county discovery is not greatly dissimilar in its behavior. In Pecos county, the Mid-Kansas-Transcontinental discovery has produced as much as 350 barrels daily in a sand horizon at total depth of 1005 feet. If the producing area is at all extensive the pool will prove one of the most profitable in west Texas because of the relatively low development cost.

IN the territory west of San Angelo, Reagan county had 155 producing wells, Jan. 1, 1927, compared with 74 wells a year before; Crockett county 27 as against 2; Upton county 138 as against only two or three; Crane county 19 as against none; Loving and Winkler counties one each.

Wildcatting was proceeding northwesterly toward the Artesia, N. M., and Maljamar fields, the last mentioned in Eddy county, N. M., work going ahead both across the old salt basin and along its southwestern rim. The rim follows the general course of the Pecos river. Another wildcatting play is gaining somewhat in proportions along the eastern rim of the salt basin in a northeasterly direction from the area adjacent to the Big Lake field toward the Westbrook pool in Mitchell county.

Headquarters for much of the work in the West Texas plains country center at San Angelo, except in that part of the general area which is reached most easily from points on the Texas & Pacific railroad, such as Colorado City and Midland. The general area of present production in Reagon, Crockett, Pecos, Upton and Crane counties is

Gasoline is Cheapest Of All Staples

"Because of the efficiency of the oil industry and the fact it has passed on to the consumer every benefit from improved methods, gasoline is now the cheapest staple in the United States."

Judson C. Welliver, director of public relations of the American Petroleum Institute, made this statement before the West Texas Petroleum Club meeting at San Angelo, Jan. 21. He showed that, from 1913 to 1926, gasoline had increased but 25 per cent in price, and stood at the bottom of the list of staple commodities in this respect.

"The Department of Labor statistics showed in October, 1926, an increase in wholesale prices averaging 149.7 per cent since 1913," Mr. Welliver said in the course of his talk. "That is, it costs $1.497 today to buy as much as $1.00 would buy in 1913.

"But that $1.497 is merely an average for all commodities. Some groups of commodities have advanced very much more than others.

"Between 1913 and 1926, house furnishings increased in price 126.5 per cent. Anthracite coal increased 125.5 per cent. Bituminous coal increased 114.5 per cent. Brick increased 105 per cent. Woolens and worsteds increased 189 per cent. Going down the list, other increases, group by group were:

	Per Cent
Boots and shoes	84.3
Lumber	81.6
Building materials	63.6
Fuels, except bituminous and anthracite	57.4
Silks	54.4
Meats	54.3
Cotton goods	53.
Milks, butter, cheese	53.6
Other foods	51.7
Grains	42.5
Poultry	42.
Furniture	40.1
Farm products	33.7
Structural steel	32.4
Gasoline	24.8

usually reached via the Santa Fe and Orient railroads to San Angelo and the Orient (K. C. M. & O.) west of the Tom Green county metropolis.

San Angelo's growth in oil industry importance made possible the original convention under auspices of the West Texas Petroleum Club. Its importance then was small in comparison with now, notwithstanding its place in the sun had been firmly established.

Although the convention was largely of social character it provided a vehicle for many oil operators and members of their organizations to renew acquaintances in the industry; and it made possible for newcomers a visualization of the vast empire of west Texas that is now only beginning to be explored for oil.

OFFICERS of the club, who cooperated with the San Angelo Board of City Development in making the convention a success, are headed by Levi Smith, also president of the Big Lake Oil Co. Other club officers include James A. Bermingham, late of the Simms Oil Co., who resigned to become assistant division superintendent of The Texas Co., at Fort Worth; H. H. Lee, Republic Production Co.; N. E. Tanner, Humble Oil & Refining Co.; Herbert O'Bannon, San Angelo banker; K. M. Hancock, Dixie Oil Co., Inc.; W. H. Winn, Marland Oil Co. of Texas; and Robert G. Carr of Northrup & Carr.

Natural Gasoline Shippers Ask Recognition in Freight Rates

Staff Special
TULSA, Jan. 22.

RECOGNITION of natural gasoline as a separate commodity, distinct from refinery gasoline and all other petroleum products and entitled to its own system of rates, was pressed before the Interstate Commerce Commission at the New York hearing of the present general rate investigation. A number of witnesses were called before Examiner John B. Keeler to substantiate the claims of the industry as being pushed by the Phillips Petroleum Co. and the Chestnut & Smith Corp.

F. E. Burke, traffic manager for Chestnut & Smith, presented exhibits tending to show that natural gasoline now is considered as a raw product which must be subjected to further manufacturing processes before its sale to the public and hence has a system of rates unrelated to refined products in many instances. He showed a number of rates within the state of Texas as well as in other states throughout the southwest.

In the present investigation, the natural gasoline manufacturers are contending that separate rates should be set up from manufacturing centers in the southwest to large consuming refining centers on the Atlantic coast and elsewhere. The industry requires lower rates to move the raw material over such long distances and it was shown that much natural gasoline is moving by coastwise steamer now to avoid the high freight rates.

As a part of the case, the manufacturers presented testimony to show that rates from the Ranger and Breckenridge district to the east should be on a par with those from north Texas. Mileage figures were presented to show that to the Vicksburg gateway over the Mississippi, on which present rates are based, the distance from the Ranger-Breckenridge and from Wichita Falls-Burkburnett is equal and that to blending points east of the Mississippi the advantage of north Texas is less than 50 miles.

Comparing rates on farm products and a large number of other commodities, the gasoline men sought to show that rates from Amarillo to the east should be on a par with those from north Texas. It was shown that the Panhandle district has become an important producer of natural gasoline with 35 natural gasoline plants operating or building capable of processing 411,000,000 cubic feet of gas per day and of producing 285,000 gallons of gasoline per day.

C. R. MUSGRAVE, traffic manager for the Phillips Petroleum Co., Bartlesville, attacked the estimated weight of natural gasoline which is now classed with refinery gasoline at 6.6 pounds per gallon. He showed that the average actual weight of natural gasoline is 5.5 pounds per gallon. On that basis natural gasoline rates are now 20 percent higher than refinery gasoline rates.

Expecting that the railroads will try to claim that natural gasoline is hazardous to transport and should take a higher rate, figures were quoted showing that since the nature of the product has been learned and proper precautions taken the losses have been very light. In 1926, for example, Chestnut & Smith paid freight bills totaling $1,864,637.15 and made 9 claims against the carriers totaling $1,530.93. The company shipped 10,422 cars in the year.

A. V. Bourque, secretary of the association of Natural Gasoline Manufacturers, showed that losses from 1916 to 1920 inclusive were $2.47 per car of natural gasoline transported. Since that time, however, losses have been extremely low. From 1921 to 1925 the losses have been only $0.57 per car as compared with $0.43 for other refined petroleum products. This small loss was on a movement of 443,471 cars in the five years.

A. N. G. M. Convention to be Held May 24, 25, 26

TULSA, Jan. 22.—The annual convention of the Association of Natural Gasoline Manufacturers will be held at Tulsa on May 24, 25 and 26, it was decided at a meeting of the board of directors held here Jan. 20. Convention headquarters will be at the Mayo hotel. The above dates are a month later than was planned originally.

One day of the convention will be given over largely to a study of natural gasoline in its relation to refinery gasoline to produce a finished motor fuel. Dr. G. G. Brown of the University of Michigan, director of research for the association will have an important part in this program to report on his findings.

One day's program will be given over to a meeting of natural gasoline plant operators. At these meetings the superintendents, and other employes will discuss manufacturing problems.

The board of directors voted at its meeting last week to create a committee on excessive outages on tank car shipments of natural gasoline. Emby Kaye, general superintendent of the gasoline department of the Skelly Oil Co., was made chairman of this committee. E. L. Peck, president of the association will name other members.

Crude and Refined Stocks Gain in December

NEW YORK, Jan. 24.—Pipe line and tank farm crude oil stocks, as well as stocks of refined products at refineries east of the Rockies, increased in December, according to a preliminary report of the American Petroleum Institute, covering 83 per cent of the country's operating capacity.

Pipe line and tank farm gross domestic crude oil stocks increased 172,000 barrels in December, compared with a gain of 2,300,000 barrels in November, and stood at approximately 257,400,000 barrels at the end of the year east of the Rockies.

A net increase of 1,274,000 barrels in refined oil stocks at refineries east of the Rockies was recorded in December, all stocks increasing except gas and fuel oil which decreased 1,525,000 Bbls.

Refinery stocks of crude in December gained 80,000 barrels, standing at approximately 35,100,000 barrels on Dec. 31, compared with a decrease of 2,000,000 barrels in November.

Gasoline stocks increased 2,249,000 barrels east of the Rockies compared with an increase of 1,300,000 barrels in November. Kerosene stocks increased 399,000 barrels and lube oil stocks gained 90,000 barrels.

BULLETIN

WASHINGTON, Jan. 25.—The Interstate Commerce Commission has canceled oil hearings now set for New Orleans on Feb. 23 and Cincinnati March 9. It has reassigned those hearings at New Orleans for March 2 and Washington March 28.

Successful Methods of Burning Residuum From Cracking Plants Discussed

By J. C. Chatfield

N. P. N. Staff Writer

WICHITA FALLS, Jan. 24

PROBLEMS of clay burning to minimize losses at refineries and the disposition of Dubbs residuum occupied the attention of refinery superintendents and technologists at the final session of the operators' conference held here under the auspices of the Western Petroleum Refiners Association.

Louis Mann of the Empire Refineries Inc., led the discussion of clay burning and W. E. Perdew of the Derby Oil Co., Wichita, led the discussion of burning Dubbs residuum. The latter subject occupied the attention of the operators a greater part of the morning.

After describing various methods of disposal of residuum which have resulted in waste of more or less serious character, Mr. Perdew described the method used at the Derby plant of burning the residuum under stills. The Derby method follows in general the method first employed at the Pure Oil Co. refinery at Ardmore which was exclusively described in National Petroleum News in the issue of Jan. 20, 1926.

In this method the Dubbs stills are operated to take off as much pressure distillate as possible with a fluid residuum. The residuum is run to a flash still from which a distillate is taken off overhead and the remaining fuel is circulated through a fuel belt line to burners, being kept hot by steam coils in the still and constantly moving through the lines.

At the Derby plant probably four or five times as much fuel is circulated through the belt line as is burned under stills. Two flash stills are used, one being kept as a stand-by while the other is being cleaned out.

MR. PERDEW explained the few difficulties which have been encountered in operating the system and steps which have been taken to overcome them. The Dubbs residuum is blown directly into the flash still instead of through cooling coils to tanks and pumps. When a unit is brought down all of the heavy material in the reaction chamber is blown over into the flash still.

The flash stills are subjected to sudden changes in temperature and pressure because Dubbs units are drawn down intermittently. This does not affect the rate of flow through the belt fuel line since a Fisher governor on the pump maintains a constant pressure with the aid of a pinched-in valve in the line just before the unburned residue fuel returns to the flash still.

The sudden changes did cause the vent line on the look box handling overhead distillate from the flash still to spew out once in a while. To prevent this Mr. Perdew had a 50-gallon drum placed on top. This drum was equipped with vent holes and a drain leading back to the run-down line.

"It is absolutely essential to provide two independent suction manifolds leading from the flash still," Mr. Perdew said. "In the 3-inch suction lines we use extra heavy malleable and some steel fittings and place an ordinary still thermometer in each line near the still. The connections on these lines and manifolds are such that they can be opened up easily for cleaning with air tools and blown out with both steam and with gas oil from a high pressure pump. The suction manifolds have given us the most trouble in the way of plugging up."

TO aid in cleaning the 1½-inch circulating line a good many flanges have been used. Ample expansion bends also have been installed. In all parts of the line which may be shut down or shut off tees have been inserted with steam or gas oil connections. Mr. Perdew warned operators that when any part of the system is shut down the hot residuum in that part of the line must be removed quickly and completely. This is done at the Derby plant by steam, charging stock or gas oil. Steam has been found to be the best.

"In case residuum is allowed to cool in the line, even though it may not be completely plugged up, it cannot be removed by re-solution in hot residuum," Mr. Perdew stated. "Once a deposit is formed it is there to stay until removed by Lagonda cleaners or other mechanical means.

"At the Derby plant two Worthington 10 by 4¼ by 10 Duplex steam pot style valve pumps are used. These are designed to handle oil up to 625 degrees F. It is necessary to put a rather large air chamber between the discharge line and the pump governor and to partially fill this chamber with either gas oil or charging stock. The connection between this chamber and the pump discharge line has a tendency to plug up with cold residuum and should be designed to be shut off right at the discharge line and steamed and cleaned out. The air chamber, made out of a piece of six-inch pipe with the ends welded, should be designed and connected so that it can be taken down easily for cleaning and refilling.

"In the 1½-inch circulating line at each Dubbs furnace we have a 1½ by ½-inch drop forged steel tee. In this we put a short nipple and then a No. 7 Crane globe valve equipped with a hot oil composition seat, then a short nipple followed by a tee for steam connection. This is important to enable the immediate steaming of the entire ½-inch line leading to the burner when it is shut off."

MR. PERDEW reported that he has had no difficulty with particles in the fuel residuum clogging burners. Too slow a feed will cool down and choke the burner. To avoid this the Derby furnaces are being fired from only one end. If one clogs up the other end can be started at once. When a burner is shut off the core of the valve should be removed, cleaned and graphited.

The Derby system has been continuously in operation since last July, furnishing all fuel burned by the Dubbs furnaces. Flash stills must be cleaned out about every 8 to 10 days due to accumulation of semi-solid matter. This amounts to about one ton per 1000 barrels of charging stock. It is pulverized and sold with coke. Cleaning out costs about $10. The entire system costs about $14,000; two stills at $1,300 each, pumps at $656 each being the main items except for the piping, fittings and insulating material.

D. H. Hyler, superintendent of the Continental Oil Co. of Texas plant at Wichita Falls, (formerly Texhoma Refining Co.) announced at the meeting that his plant recently has been equipped with a similar system except that he has installed a small bubble tower over his condenser box. Hot residuum from the four Dubbs units flashes into the still at around 600 degrees. The overhead from the still passes through a 5 by 12 foot bubble tower equipped with nine plates.

This tower yields 1½-percent pressure distillate and 7 percent gas oil with an initial boiling point of 440 degrees F. These percentages are figured on the total Dubbs charge. The residue runs from 3 to 8 A. P. I. gravity. It is pumped through a reboiler in the bubble tower to the burner tank at about 175 degrees F.

AT the Continental plant the fuel circulation is 6 or 7 times as great as the amount burned. The pump discharge pressure is 60 pounds per square inch and the pressure on the returned residuum is about 20 pounds. There is a loss of only 5 degrees in temperature during the circuit. Mr. Hyler suggested that if a rotary pump were put on a line pulling from the bottom of the flash still it probably would chew up the solid matter being deposited and enable most of it to be used as fuel. The Continental

installation cost about $12,000. Returns indicate that it will pay out about every two months.

Frank Hovell, superintendent of the Grayburg plant at San Antonio, told of the colloidal mill which he is using to mix straight reduced fuel with Dubbs residuum for railroad fuel. He is producing 600 barrels of a 50 percent mixture each day.

Mr. Hovell found that it was necessary to add 4 to 5 pounds of cheap axle grease per barrel of residuum to provide a medium of suspension for solid particles. This brings the cost of preparation of the fuel up to 14 to 15 cents per barrel but there is a high fuel oil market at San Antonio and a low gas price which makes the operation desirable. Recently Mr. Hovell has been experimenting with the production of petroleum asphalt from Dubbs residuum.

Mr. Mann of the Empire Refineries Inc., discussed the development of clay burners in recent years informally. He took the place on the program of H. W. Camp, general superintendent of refineries for that company, who was unable to be present.

After describing earlier burners of various types, Mr. Mann gave a detailed account of the operation of the Wedge burner now being used at the Empire plants. He stated that the loss from powdering is small and that apparently the clay can be used almost an indefinitely number of times. The handling and burning losses at Empire plants have been about 5 percent for each burning. That amount of fresh make-up clay is added each time the filters are packed.

THOROUGH steaming of clay before charging to the burners was stressed by the speaker as being necessary to remove volatile matter. Otherwise the volatile matter will make an exceedingly hot fire in the furnace, possibly burn out the upper section or flue and glaze the earth thus destroying its properties.

Another caution was in the removal of all caustic from earth before it is burned. Caustic in the furnace forms sodium salts and fuses the earth into glassy particles which have no adsorbent value.

During the trip through Wichita Falls refineries the Foamite-Childs Co. gave a demonstration of the use of Amdyco equipment with the aid of the Wichita Falls fire department. A chemical mixer was placed in the regular water hose used by the department.

CHICAGO, Jan. 22.—Arthur Stoll, salesman for the Central Commercial Co. here, who underwent an operation for ulcer of the stomach at the Mayo clinic in Rochester, Minn., July 11, is reported as improving steadily. Mr. Stoll will be at St. Mary's hospital, Rochester, Minn., for several weeks.

Specifications of Natural Gasoline to be Studied

Staff Special

TULSA, Jan. 22.—The specifications committee of the Association of Natural Gasoline Manufacturers will make a study of the present trend of manufacturing in the industry to determine whether any changes in present standard specifications are desirable, it was announced today by A. V. Bourque, secretary of the association. The committee was directed to undertake the work by the board of directors at a meeting held in Tulsa on Jan. 20.

Present specifications for natural gasoline were adopted on Nov. 1, 1924. There are five grades at present. The grades were amended two years ago to provide specifications for high gravity, high recovery products then being manufactured in quantity as a result of improved plant practice.

Simms Building Gasoline Plant

TULSA, Jan. 24.—Simms Oil Co. is building a seven million-foot gasoline plant near El Dorado, Ark., in Sec. 9-16-15 on the Hardy-Murphy leases of Roxana Petroleum Corp. and Lyons Petroleum Co. The plant is to be a combination of the oil and charcoal absorption processes.

Registration 1st—W. P. R. A., Plant Operator's Meeting, Wichia Falls, Jan. 17-18

A		
Anderson, O. F.	Olney O. & R. Co.	Olney, Tex.
Allen, H. A.	American Ref. Co.	Wichita Falls, Tex.
B		
Beddew, John	American Ref. Co.	Wichita Falls.
Berryman, O. H.	Interstate Gas. Co.	Wichita Falls.
Bartlett, K. W.	Graver Corp.	Tulsa, Okla.
Bennette, H.	West. Per. Ref. Ass'n.	Tulsa, Okla.
Barnhart, A. C.	Catawissa Unions	Wichita Falls.
Burruss, Geo. H.	Col-Tex Ref. Co.	Colorado, Tex.
C		
Chatfield, J. C.	National Pet. News.	Tulsa, Okla.
Carey, D. J.		Burkburnett, Tex.
Cutter, John	Prod. & Ref. Corp.	Tulsa, Okla.
Christman, D.	Crystal O. & R. Corp.	Shreveport, La.
Carter, McC.	Universal Oil Prod. Co.	
D		
Drown, W., Jr.	Universal Oil Prod. Co.	
Dickey, J. B.	American Ref. Co.	Wichita Falls, Tex.
Durkee, Chas. C.	White Eagle Co.	Augusta, Kans.
Dayson, S.	Lion Oil Ref. Corp.	El Dorado, Ark.
Donaldson, J. R.	Chi. Bridge & Iron Co.	Dallas, Tex.
F		
Frichot, B. C.	Shaffer O & R Co.	Cushing, Okla.
Francis, C. K.	Skelly Oil Co.	El Dorado, Kans.
Frank, Fred, A.	Max B. Miller Co.	Tulsa, Okla.
Fuller, J. S.	P. J. Sonner Gas Co.	Winfield, Kans.
G		
Greene, C. F.	Greene Bros.	Wichita Falls, Tex.
Gray, McDowell	Marland Ref. Co.	Ponca City, Okla.
Gray, E. G.	Orient Pet. Co.	Wichita Falls, Tex.
Gross, W. M.	Graver Corp.	
H		
Hinds, J. C.	Waggoner Ref. Co.	Wichita Falls, Tex.
Hovell, Frank	Grayburg Oil Co.	San Antonio, Tex.
Holland C. J.	American Ref. Co.	Wichita Falls, Tex.
Hyler, D. H.	Continental Oil Co.	Wichita Falls, Tex.
Herle, F. L.	Continental Oil Co.	Denver
Harrison, W.	Star Ref. & Prod. Co.	Ft. Worth, Tex.
J		
Jacobs, R. W.	Orient Petroleum Co.	Wichita Falls.
Jungerman, H.	C. J. Tagliabue Co.	Brooklyn, N. Y.
Jones, Roy B.	Panhandle Ref. Co.	Wichita Falls.
K		
Koch, F. C.	Winkler & Koch	Wichita, Kans.
Kelley, D. B.	American Ref. Co. &	Wichita Falls.
Kaufman, Leo	Southern Chem. Co.	Wichita Falls.
L		
Lientz, R. H.		Fort Worth
Leenhouts, Wm. J.	Johnson Oil Ref. Co.	Cleveland, Okla.
Lientz, B. P.	B. P. Lientz-O. Fur. Co.	Kansas City, Mo.
Moody, W. E.	Shaffer O & Ref. Co.	Cushing, Okla.
M		
Mann, Louis D.	Empire Refs., Inc.	Tulsa, Okla.
Munsell, R. C.	Ref. & Natl. Gas Mfgr.	Tulsa, Okla.
Minkeman, W.	Universal O. Prod. Co.	Chicago, Ill.
McKay, C. R.	Pierce Pet. Corp.	Sand Springs, Okla.
Miller, J. F.	Western Oil Corp.	Wichita Falls.
Marner, C. S.	Graver Corp.	Tulsa, Okla.
Mary, E. J.	Shreveport P & R Co.	Shreveport, La.
Muense, J. F.	Primrose Ref. Co.	Wichita Falls.
Males, O. B.	Panhandle Ref. Co.	Wichita Falls, Tex.
Moore, C. C.	American Ref. Co.	Wichita Falls.
Marshall E. C.	White Eagle Ref. Co.	Kansas City, Mo.
Mechling, D. G.	Tidal Ref. Co.	Tulsa, Okla.
N		
Nolan, M. H.	Prod. & Ref. Corp.	Tulsa, Okla.
Nevitt, H. G.	White Eagle Ref. Co.	Augusta, Kans.
O		
Orr, T. J.	Marland Ref. Co.	Ponca City, Okla.
P		
Peppers, C. C.	Champlin Ref. Co.	Enid, Okla.
Perdew, W. E.	Derby Oil Co.	Wichita, Kans.
Peterson, R. S.		Kansas City, Mo.
Priddy, W. M.	American Ref. Co.	Wichita Falls
Parker, H. O.	Mathieson Alkali Co.	New York City
Pomeroy, F. A.	Tex-Pac. C & O. Co.	Wynnewood, Okla.
R		
Roy, E. H.	Empire Refs., Inc.	Tulsa
Record, H. E. Jr.	Continental O. Co.	Wichita Falls.
Robertson, H. J.	Pierce Oil Corp.	Tulsa, Okla.
Redfield, R. E.		Wichita Falls.
S		
Stoltz, H. R.	Indian Ref. Co.	Lawrenceville, Ill.
Shattuck, L. H.		Wichita Falls, Tex.
Silk, W. W.	American Ref. Co.	Wichita Falls, Tex.
Smith, O. L.	Tidal-Western O Corp.	Burkburnett, Tex.
Sartori, J. M. A.	Prod. & Refs. Corp.	Denver, Colo.
Sapp, Eugene	Derby Oil Co.	Wichita, Kans.
Sims, W. F.	Panhandle Ref. Co.	Wichita Falls.
Staley, F. L.	Tex-Pac. C & O Co.	Fort Worth, Tex.
Simmons, L. B.	Rock Island Ref. Co.	Duncan, Okla.
Simon, C. G.	M.west Pip. & Sup. Co.	Tulsa, Okla.
T		
Tinkler, P. I.	Anderson-Prichard Co.	Gyril, Okla.
Thoen, J.	Marland Ref. Co.	Ponca City, Okla.
Truly, Tom	Record News	Wichita Falls.
V		
Vance, Geo. M.	Phillips Pet. Co.	Bartlesville, Okla.
W		
Waldeck, Jos.	Lunkenheimer Co.	St. Louis.
Wheeler, J. E.	B. P. Lientz & Co.	Kansas City, Mo.
Weyrick, E. C.	P. J Sonner G-B Co.	Winfield, Kans.
Willson, C. O.	Oil & Gas Journal	Tulsa, Okla.
Williams, R. B.	Orient Pet. Co.	W. Falls.

25 Michigan Jobbers Sell Uniform Gasolines Under "Dixie" Name

By Ward K. Halbert
N. P. N. Staff Writer

KALAMAZOO, MICH., Jan. 22 TOURISTS that drive into the lower peninsula of Michigan in the summer of 1927 will be offered uniform gasoline and oils under one brand name at Independent filling stations from the Indiana line to the Straits of Mackinac. Already 25 Independent jobbers whose territories lie across the southern border and along the east coast of Lake Michigan are applying generous coats of royal blue and chrome yellow paint to pumps and tanks, trucks and buildings. And here and there the traveler reads that tantalizing jingle:

The power to pass
That's Dixie Gas

It was here in Kalamazoo about two years ago that the Dixie Gas movement got its start. L. V. White, L. V. White Co., a comparatively young jobbing enterprise, developed the color combination, selected the trade name "Dixie" and conjured the inspired little ditty. He used it for a while and passed it along without compensation to be used by his neighbor firm, Grimes & Madigan of Grand Rapids. And a little experience showed that the combination actually improved business of both.

The next logical move was to widen the circle and the others came in. The next development was to organize on a legal basis and in the summer of 1926 the Dixie Distributors, Inc., was organized under the laws of Michigan with a board of seven governors, chosen from among the heads of firms then in the organization. L. V. White is chairman of this body.

THE L. V. White Co., Kalamazoo, ceded its trade marks, color scheme and slogan to Dixie Distributors, Inc., with all rights to license other jobbers to use them under stipulations already tentatively agreed upon. Now there are upwards of 25 license holders, of which the L. V. White Co. is only one with no special privileges. Companies run by the other six officials occupy a similar position. The seven incorporators of Dixie Distributors, Inc., are:

Mr. White; J. J. Theisen, Theisen-Clemens Co., St. Joseph; F. S. Grimes, Grimes & Madigan, Grand Rapids; C. J. Westland, Cardinal Petroleum Co., Muskegon; William C. Vandenberg, Vandenberg Bros. Oil Co., Holland; N. J. Jochum, Big Chief Oil Co., Wyandotte, and Archie McGilvray, S. T. & H. Oil Co., Bad Axe.

When a jobber enters the Dixie Gas group and assumes the responsibilities of membership the initiation fee is the same to all, regardless of size, $100. After that each leasee pays to the incorporators on a gallonage basis. Just now the rate is ⅓ mill a gallon or 3 cents a 100 gallons. Under the contract, the rate can not exceed ½ mill a gallon, or 5 cents a hundred.

If the governing body wishes to raise the rate, it can not be done without the written consent of a sufficient number of licensees that their combined gallonage constitutes a majority of the gallonage handled by the entire group. Even then it does not take effect for 90 days after all the licensees have been notified. One of the license holders can voluntarily terminate his contract with Dixie Distributors, Inc., on 60 days' notice, and on the other hand the incorporators can expel an undesirable associate for violation of agreements on a notice of 30 days.

LICENSE holders are awarded exclusive rights in given territories. They outline their territories when they apply for rights to sell Dixie Gas and are granted it, provided they have enough outlets therein to serve the territory,

Members may buy their gasoline wherever they please, but they may not sell it under any name they please. They are not allowed to pay for the rights of selling Dixie gasoline and other products and not do it. Moreover, Dixie Gas has to conform to certain specifications. The competitive grade of Dixie Gas' must be 58-60 U. S. Motor gasoline—whatever the Federal Specifications Board makes official. The Dixie high test product, if the jobber markets such a motor fuel, must not be inferior to 64-66 390 e. p. gasoline.

Moreover the motor oil sold by the Dixie distributors must be of uniform color and specification. There are five prescribed qualities and two elective kinds. If a member wishes to adhere to strictly Pennsylvania products he may call them Dixie Penn motor oils, and likewise if he wants to sell Texas lubricants he is at liberty to do so, calling them Dixie Pale motor oils. Here are the prescribed specifications for the five grades of Mid-Continent motor oils:

Light—200 seconds viscosity at 100°; 45 sec. at 210°; 25-26° gravity; flash 395 to 405°; fire 450 to 460°, and 25-30° cold test.

Medium—350 sec. vis. at 100°; 55 sec. at 210°; 25-26° gravity; flash 400 to 410°; fire 460 to 470°, and 25-30° cold test.

Heavy—500 sec. vis. at 100°; 62 sec. at 210°; 24-25° gravity; flash 410 to 420°; fire 470 to 480°, and 25-30° cold test.

Extra Heavy—700 to 750 sec. vis. at 100°; 71 sec. at 210°; 23-24° gravity; flash 420 to 430°; fire 480 to 490°, and 25-30° cold test.

Super Extra Heavy—1100 sec. vis. at 100°; 90 sec. at 210°; 23-24° gravity; flash 440 to 450°; fire 480 to 500°, and 25-30° cold test.

ALTHOUGH the required specifications for gasoline and motor oils alike are rigid and must be adhered to, a jobber member is not limited as to the number of national brands of motor oil he carries. He may sell any national brand he likes, and as many of them as he likes. And, although the board of governors has a purchasing committee whose purpose is to make advantageous contracts for the benefit of the group, a member is not required to buy through the committee unless he wants to.

It is expected that all the members buy such little things as road signs, poster advertising, road maps, etc., through the committee immediately because the use of the committee affords a saving. Eventually it is believed that members will find it worth while to patronize the same advertising agency, to co-operate in newspaper advertising, and perhaps to buy of the same compounder and the same refiner. But a member may always continue to be his own purchasing agent to any extent he wishes.

Federal Oil Board Will Visit General Motors

WASHINGTON, Jan. 25.—Upon invitation of C. F. Kettering, general director of General Motors Research Laboratories, the technical committee of the Oil Conservation Board will visit the General Motors laboratories in Detroit on Jan. 27 to study some of the work the corporation is doing with a view to the conservation of oil by better combustion.

Secretary Work is contemplating the calling of a public meeting before the board in February or March in answer to suggestions made to him by oil men. He suggests, however, that perhaps the industry will not be ready so soon as that to discuss recent developments and that perhaps a later meeting will be more desirable. However, he is willing to call one as soon as the industry desires.

Russell Just Won't Take "No" For Answer on Oil Tax Increase

Staff Special

TULSA, Jan. 22

NO sooner is the back broken of some measure designed to increase the taxes on the oil industry in Oklahoma than another is incubated.

Campbell Russell, defeated in the last general election on his initiative bill, is active again. This time it is to increase the gross production tax on oil from the present 3 to 5 per cent.

While no great alarm is felt by oil men over the chance for the proposed increase becoming law, the Mid-Continent Oil & Gas Association issued a statement last week to put at rest rumors it is sanctioning an increase. Said the association, through Henry McGraw, of the Gypsy Oil Co., president of the Oklahoma-Kansas division:

"The irrepressible Campbell Russell now is active in urging the Oklahoma legislature to increase tax burdens. Although in the general election on Nov. 2, 1926, throughout Oklahoma, his initiative bill to raise the gross production tax on oil from the present 3 per cent, or 30 mills, to practically 4.7 per cent, or 47 mills, was defeated by a majority of 151,825 votes, now he is asking the legislature to enact a 5 per cent gross production tax law.

"Russell, James A. Wilson and J. H. Johnson, of Oklahoma City, are visiting the various areas of the state and are busy reorganizing Russell's pet Taxpayers' League. It is their plan from each county of the state to have one representative of the so-called Taxpayers' League visit Oklahoma City for the purpose of exerting pressure upon the legislature to pass a 5 per cent gross production tax law and other disturbing tax legislation. Wilson is circulating the false report that the Taxpayers' League and the Mid-Continent Oil & Gas Association are in conference with the view of agreeing so to raise and increase the present gross production tax.

"THE Taxpayers' League, so far as I am aware, is only a name for a a part of Campbell Russell's political following. No officer or other representative of the Mid-Continent Oil & Gas Association has conferred, or contemplates conferring, upon the subject with Campbell Russell, James A. Wilson, J. H. Johnson, or any other member of the alleged Taxpayers' League of Oklahoma.

"Last fall, during the educational campaign upon the Campbell Russell bill it was demonstrated that the average state-wide ad valorem tax levy is 29 mills imposed upon less than a 50 per cent assessed valuation of property; whereas, the petroleum industry, under the present law imposing a 3 per cent gross production tax, actually pays 30 mills upon 100 per cent of the value of oil property. The farmers on whose lands oil or gas is produced, as well as the oil and gas producers in the state, pay the present gross production tax. It was proven to the satisfaction of the voting public that the bill was inequitable and would work gross injustice by requiring the oil industry to pay twice as much per dollar of value as any other class of property. In principle the bill was discriminatory, unfair and vicious.

"The Oklahoma legislature, 1910, fixed the gross production tax rate at one-half of one per cent; in 1915 at 2 per cent, and in 1916 at 3 per cent of the actual selling price of the oil and gas when produced. Since 1910 the rate has been increased 500 per cent. In addition, the usual ad valorem tax is paid on oil in storage as well as upon pipe lines, tanks, lease houses, buildings, equipment, refineries, tank cars and materials and supplies of all kinds annually.

"Aside from such ad valorem taxes paid by the oil industry annually, the gross production tax paid the state of Oklahoma ranges from $8,000,000 to $10,000,000. Two-thirds of the gross production taxes paid go to the state, and one-third to the county where the oil and gas are produced. With this source of vast revenue, the state no longer is obliged to impose any ad valorem tax levy. In fact, the state has accumulated a substantial surplus in excess of its expenditures. Obviously, the state is not in need of additional revenue. Besides, it would be discriminatory, inequitable and grossly unjust to further increase the tax burdens of the oil industry."

Bartlesville Mines Station Asks More State Aid

Staff Special

TULSA, Jan. 24

THE Oklahoma State legislature is being asked to provide funds for a new building for the U. S. Bureau of Mines experiment station at Bartlesville and to increase the state appropriation for its maintenance the next two years. An appropriation of $65,000 is requested for the new building and site and $10,000 for repairs and improvement of present buildings. An operating appropriation of $50,000 per year is asked.

The present buildings at Bartlesville were designed to accommodate between 8 and 15 men. At present the government employs 42 persons at the station and erection of temporary sheet metal buildings has been necessary. These buildings do not give proper housing for the highly valuable and delicate scientific apparatus used in the various experiments.

One of the present investigations of the Bureau is the possibilities of recovering a greater part of the oil from the sand than has been the practice heretofore. Every accomplishment along this line will benefit Oklahoma through increasing tax collections on oil produced as well as in aiding general prosperity of the state.

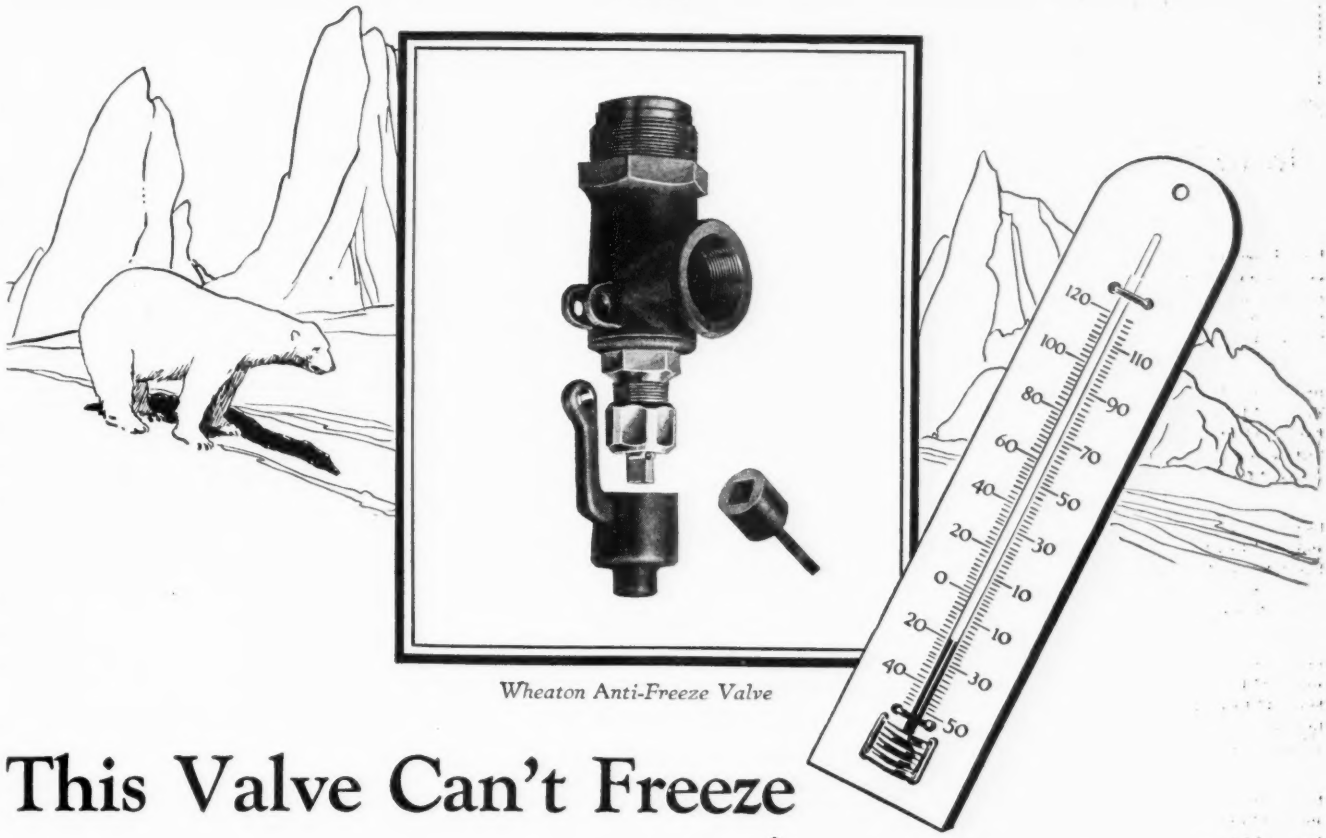
In recent years the Bureau has accomplished a great deal in directing attention of the industry to evaporation losses in handling petroleum, and methods of prevention. Lease evaporation, formerly more than three percent, is now less than one percent. This saving of crude, on the basis of 176,760,000 barrels of oil in 1925, netted the state an increase in gross production taxes of around $250,000 and to producers over $7,500,000.

Appropriations by the federal government for the operation of the station have increased much more rapidly than those from the state. In 1918 the state appropriation was $12,500 and the federal appropriation $25,000. In 1926 the state appropriation was $37,500 and the federal appropriation $102,500. The state appropriation has been increased once in the last six years and the national appropriation three times.

One feature of the new appropriation asked by the station is an allotment of $2,400 per year for printing and distribution of bulletins. This is calculated to speed up the work of giving the industry the benefit of Bureau findings. Delay is experienced now when reports must be printed by the government printing office, or the Bureau must seek the aid of some Chamber of Commerce.

Investigations and reports of the Bartlesville station have been of value in the refining industry, the production and transmission of natural gas, petroleum chemistry and oil production. The promotion of safety in the oil business in Oklahoma by training first aid teams and training men to avoid accidents has been important. Petroleum chemists from 11 foreign countries have visited the Bartlesville station for information and advice in recent months. Conservation has been promoted when Bureau men have been called in to subdue wild gas wells where operators have failed to bring them under control.

The industry has been given aid in water troubles, application of vacuum and compressed air, well cementing, producing under back pressure, treatment and elimination of emulsions and in a great many other respects.



Wheaton Anti-Freeze Valve

This Valve Can't Freeze

Because It Drains Dry

THIS Wheaton Anti-Freeze Valve is especially designed for drawing off water which settles at the bottom of storage tanks.

The valve seat is located *inside* the tank, while the valve body is located *outside* the tank, so that when the valve is closed the liquids are excluded from the body and the valve drains *dry*. With this accomplished, the danger of the valve body freezing is removed.

Many of the largest oil companies in the United States have adopted the Wheaton Anti-Freeze Valve for drawing water from the bottom of their storage tanks. They have found it ideal for this purpose, for it not only drains all the water from the tank, but, since no water ever remains in the body of the valve to freeze, there is no danger of the valve breaking and causing leakage.

From style to strength, this Anti-Freeze Valve is of Wheaton Quality. It is made of the same special-analysis, non-corrosive, non-crystallizing brass alloy—tempered, toughened and tested—which is found in all Wheaton Faucets and Valves. The extraordinary quality of this high-grade brass alloy, together with the fine fit and finish of the valve, assures perfect operation and long life. Sizes: ¾, 1 and 2-inch.

Write today for a sample. If it does not prove entirely satisfactory you may return it for full credit or refund. Also, ask for a copy of the Wheaton Catalog, which fully describes and illustrates all the other Wheaton Products.

A. W. WHEATON BRASS WORKS, NEWARK, N. J.

Wheaton

FAUCETS • VALVES • JOINTS • COUPLINGS • FILLERS • NOZZLES • FITTINGS

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended Jan. 21 (By Telegraph)

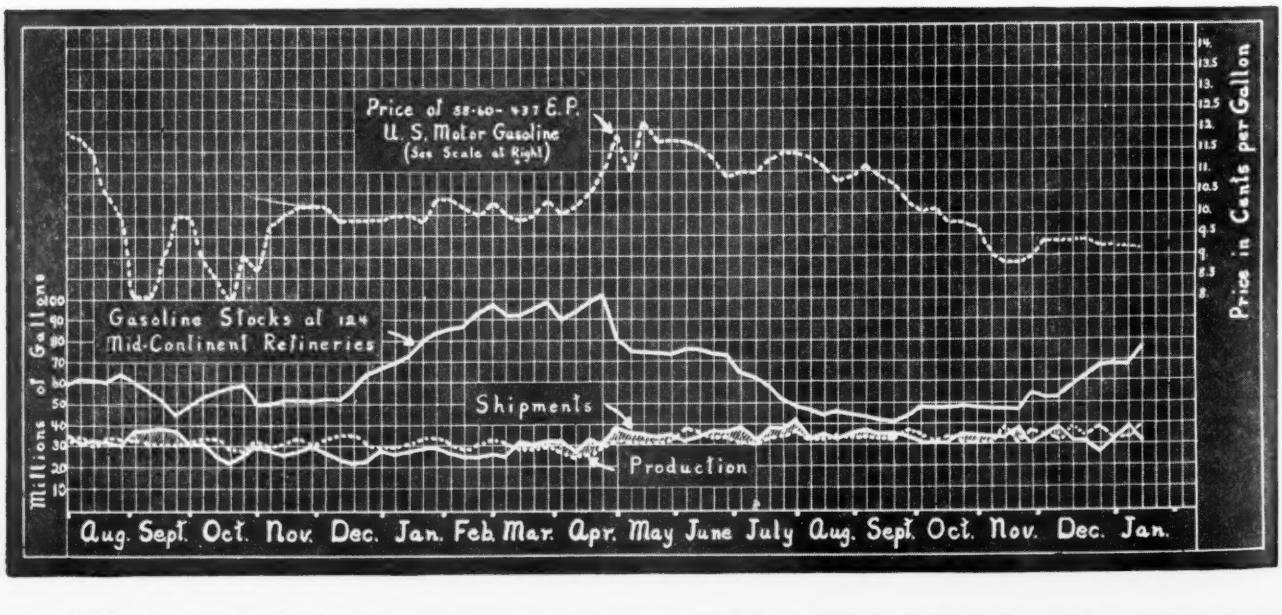
	Kansas	Oklahoma	North and Cent. Texas	North La.-Ark.	Total Week Ended Jan. 21	Total Week Ended Dec. 24
Plants Reporting	23	46	41	14	124	124
Crude Cap. (Bbls.)	98,200	165,900	144,300	53,700	462,100	462,100
Cracking Capacity	21,000	45,800	15,750	20,200	102,750	102,750
Da. Av. Crude Runs	54,047 — 1.1	105,587 + 3.8	68,787 — 3.9	52,860 + 6.3	281,281 + 1.3	279,871
Da. Av. Other Oils	3,519 —24.6	2,639 +56.9	4,384 —19.0	967 +25.3	11,509 — 8.2	14,130
GASOLINE—Gallons						
Stocks Jan. 14	10,816,079	42,934,974	11,972,492	2,306,489	68,030,034	56,599,828
Prod. 1-14 to 1-21	8,169,752 — 1.9	17,330,548 +14.6	7,208,836 — 3.6	3,926,279 +11.0	36,635,415 + 6.3	34,864,852
Ship. 1-14 to 1-21	7,556,022 —13.4	13,163,462 —18.5	6,820,897 +11.7	3,428,708 — 3.9	30,969,089 — 1.4	30,412,028
Stocks Jan. 21	11,429,809 + 5.7	47,102,060 + 9.7	12,360,431 + 3.2	2,804,060 +21.6	73,696,360 + 8.3	61,052,652
Ratio Sales to Prod	92.5%	76.0%	94.6%	87.3%	84.5%	87.2%
KEROSENE—Gallons						
Stocks Jan. 14	3,345,646	6,200,310	1,989,222	1,200,530	12,735,708	11,376,195
Prod. 1-14 to 1-21	1,393,633 — 2.3	2,393,465 + 2.3	1,348,313 — 5.3	459,335 —22.4	5,594,746 — 3.3	6,548,850
Ship. 1-14 to 1-21	1,641,198 + 6.5	2,464,693 — 0.4	1,479,224 — 0.6	501,765 + 8.0	6,086,880 + 2.0	7,037,214
Stocks Jan. 21	3,098,081 — 7.4	6,129,082 — 1.1	1,858,311 — 6.6	1,158,100 — 3.5	12,243,574 — 3.9	10,887,831
Ratio Sales to Prod	117.8%	103.0%	109.7%	109.2%	103.8%	107.5%
STOVE DISTILLATE—Gallons						
Stocks Jan. 14	3,458,710	4,586,415	1,363,635	147,386	9,556,146	10,989,830
Prod. 1-14 to 1-21	796,505 —16.6	658,122 —14.8	293,271 + 4.4	71,928 —20.8	1,819,826 —13.3	2,000,795
Ship. 1-14 to 1-21	1,554,064 +23.5	929,109 +21.6	541,595 +82.5	162,396 + 7.0	3,187,164 +29.0	2,751,275
Stocks Jan. 21	2,701,151 —21.9	4,315,428 — 5.9	1,115,311 —18.2	56,918 —61.4	8,188,808 —14.3	10,239,350
Ratio Sales to Prod	195.1%	141.2%	184.7%	225.8%	175.1%	137.5%
GAS OIL—Gallons						
Stocks Jan. 14	3,468,596	31,288,950	10,238,700	2,878,859	47,875,105	48,574,498
Prod. 1-14 to 1-21	1,304,364 — 2.2	1,994,892 —11.0	950,311 —36.5	2,727,165 +23.1	6,976,732 — 4.3	7,309,861
Ship. 1-14 to 1-21	890,658 —36.1	2,369,492 +23.2	1,585,034 +15.5	2,685,829 +42.6	7,531,013 +14.6	8,398,239
Stocks Jan. 21	3,882,302 +11.9	30,914,350 — 1.2	9,603,977 — 6.2	2,920,195 + 1.4	47,320,824 — 1.2	47,486,120
Ratio Sales to Prod	68.3%	118.8%	166.8%	98.5%	107.9%	114.9%
FUEL OIL—Gallons						
Stocks Jan. 14	8,560,648	54,430,170	11,006,817	7,709,094	81,706,729	98,929,459
Prod. 1-14 to 1-21	5,175,096 + 5.0	7,019,841 + 5.4	8,401,673 — 0.9	7,739,926 — 0.7	28,336,536 + 1.7	29,926,704
Ship. 1-14 to 1-21	5,824,307 +17.1	8,638,454 — 5.0	8,126,972 +0.01	8,571,362 — 0.3	31,161,095 + 1.2	33,035,012
Stocks Jan. 21	7,911,437 — 7.6	52,811,557 — 3.0	11,281,518 + 2.5	6,877,658 —10.8	78,882,170 — 3.5	95,821,151
Ratio Sales to Prod	112.5%	123.1%	96.7%	110.7%	110.0%	110.4%

Gasoline Produced by Various Methods, Week Ended Jan. 21

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	5,476,703	67.0	13,458,739	77.7	5,771,564	80.1	1,528,658	38.9	26,325,664	71.6
Cracked	2,287,875	28.0	2,692,323	15.5	1,320,596	18.3	2,048,475	52.2	8,349,269	22.8
Natural	405,174	5.0	1,179,486	6.8	116,676	1.6	349,146	8.9	2,050,482	5.6
Total	8,169,752		17,330,548		7,208,836		3,926,270		36,635,415	

+ or — columns are % change over previous week.

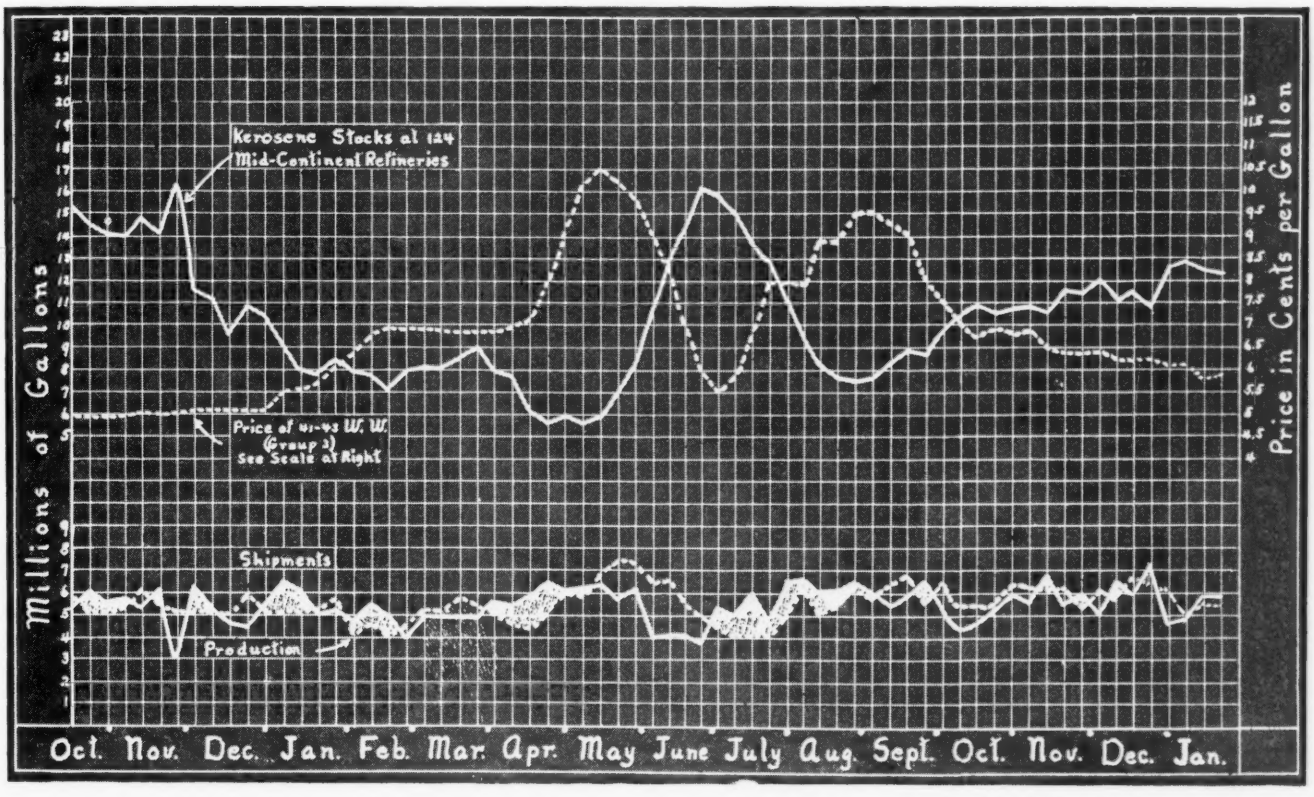
GASOLINE


Price of 58-60- 437 E.P.
U. S. Motor Gasoline
(See Scale at Right)
Gasoline Stocks at 124
Mid-Continent Refineries
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.

Barometer of Mid-Continent Refinery Market— Week Ending Jan. 21

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

KEROSENE


Kerosene Stocks at 124 Mid-Continent Refineries
Price at wells W. W. (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.

Stocks of Major Products Except Gasoline Fall

Staff Special By Telegraph

TULSA, Jan. 25

WITH the exception of gasoline, stocks of all principal commodities manufactured by Mid-Continent refiners were reduced in the week ended Jan. 21 at 124 plants in the Southwest, according to reports gathered by National Petroleum News. On a percentage basis stocks of stove distillate were cut into more deeply than any other commodity but on a gallonage basis fuel oil led the list with a withdrawal of 3,000,000 gallons from storage.

Shipments of gasoline fell sharply away from the extraordinarily high level reached in the previous week as a result of export buying. In the week ended Jan. 21 shipments were still well over 30,000,000 gallons. The decrease from the previous week was 3,400,000 gallons from 34,560,245 gallons to 30,969,089 gallons.

For the first three weeks of the year gasoline shipments from the 124 plants have totaled 95,893,392 gallons, compared with 78,486,400 gallons for the corresponding three weeks a year ago. The increase in demand over a year ago has been 22 per cent thus far. Crude runs at the 124 plants have averaged approximately 275,000 barrels a day since Jan. 1 compared with around 250,000 barrels a day in the first three weeks of January, 1926.

Gasoline stocks at all plants on Jan. 21 were 73,696,360 gallons representing 16 days' supply at the current rate of shipment on Jan. 22, 1926. The same group of plants held 77,537,352 gallons of gasoline which represented 21 days' supply at the rate of shipments being maintained at that time.

Nearly twice as much stove distillate was shipped by the 124 plants during the week as was manufactured. Production for the week totaled 1,819,826 gallons and shipments were 3,187,164 gallons. Stocks Jan. 22 of the week were down to 8,188,808 gallons representing a little less than 16 days' supply. In the corresponding week a year ago the same group of refiners reported stove distillate stocks totaling 11,149,113 gallons with shipments during the week of 2,425,911 gallons.

Shipments of kerosene increased about 100,000 gallons last week to 6,086,880 gallons while production was reduced 200,000 gallons. Stocks at all plants were reduced 500,000 gallons to 12,243,574 gallons, representing about two weeks' supply. A year ago kerosene stocks were about 4,000,000 gallons less, totaling 8,189,021 gallons on Jan. 22.

The heavy draft on fuel oil stocks which has been in progress since before

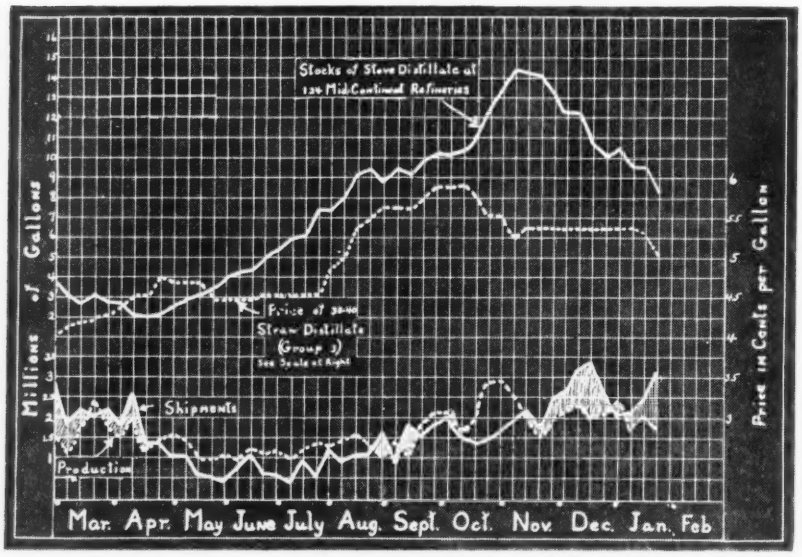
Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Jan. 21. Change in stocks figured from Dec. 24.

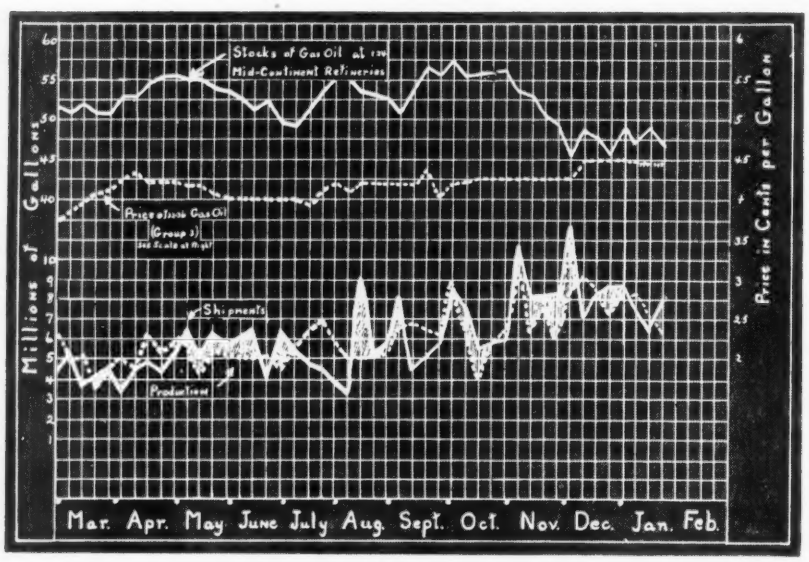
	Gallons
Gasoline	
Production	136,871,740
Shipments	124,228,032
Net change in stocks	+12,643,708
Ratio sales to production	90.8%
Kerosene	
Production	22,906,881
Shipments	21,055,138
Net change in stocks	+1,355,743
Ratio sales to production	94.1%
Stove Distillate	
Production	7,975,569
Shipments	10,026,111
Net change in stocks	—2,050,542
Ratio sales to production	125.7%
Gas Oil	
Production	30,765,543
Shipments	30,930,839
Net change in stocks	—165,296
Ratio sales to production	100.5%
Fuel Oil	
Production	111,852,381
Shipments	128,791,362
Net change in stocks	—16,938,981
Ratio sales to production	115.1%

Barometer of Mid-Continent Refining Market—Week Ending Jan. 21

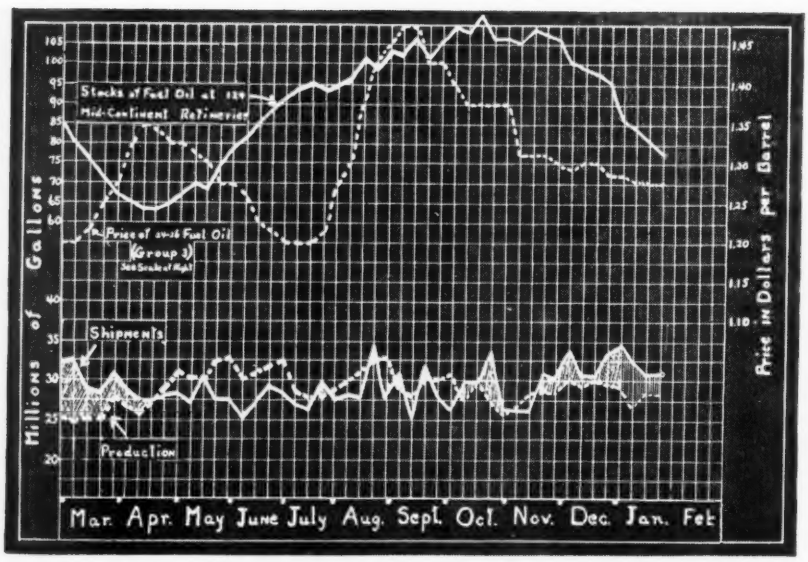
STOVE DISTILLATE


Stocks of Stove Distillate at 120 Mid-Continent Refineries
Price of 30-40 Straw Distillate (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb.

GAS OIL


Stocks of Gas Oil at 120 Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb.

FUEL OIL


Stocks of Fuel Oil at 120 Mid-Continent Refineries
Price of 30-36 Fuel Oil (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price in Dollars per Barrel
Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb.

the first of the year was continued last week. Shipments increased slightly to 31,161,095 gallons and production also was increased slightly to 28,336,536 gallons. Stocks at all plants were reduced 3,000,000 gallons to 78,882,170 gallons. During the last four weeks fuel oil stocks at reporting plants have been reduced 16,938,981 gallons. Since Nov. 23 stocks have been reduced 30,000,000 gallons.

Automobile Makers Lower Output Schedules

NEW YORK, Jan. 22.—Automotive Industries this week says:

Although the record-breaking attendance at the New York automobile show has been accepted as a favorable augury for the immediate future in motor car sales, it has yet to be shown that interest of this character has any national significance and a majority of the industry's observers prefer to wait upon actual sales developments in the next few weeks.

First quarter production schedules have been laid out on a fairly liberal basis, but are estimated to be somewhat under those of the same period a year ago. Stocks of new cars carried over from last year by dealers are only moderately greater than the 1926 carryover, the total being well under 400,000. The drastic curtailment in production of the last two months of 1926 materially improved a situation that looked dangerous for a time.

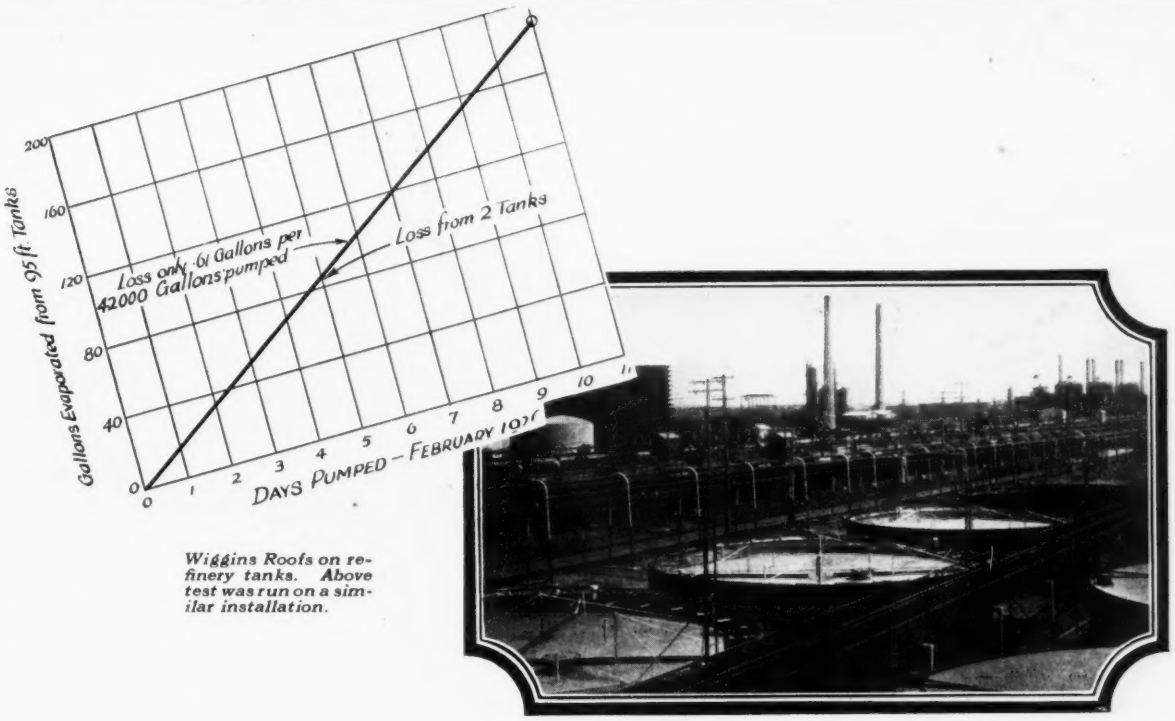
While conservatively cheerful forecasts of 1927 business are being made by the industry's leaders, the fear is expressed widely that sales in the agricultural districts are likely to prove disappointing

Trade Volume Larger Than Year Ago

WASHINGTON, Jan. 22.—The dollar volume of trade in the second week of January, although smaller than in the previous week, was greater than a year ago, as measured by check payments, according to the weekly statement of the Department of Commerce. The volume of new building contracts awarded during that week was smaller than in either comparative period.

Production of bituminous coal during the first week of January was greater than in either the preceding week or the corresponding week of the previous year. The output of lumber, although larger than in the last week of December, was smaller than in the first week of 1926. Beehive-coke output was smaller than in either comparative period. The distribution of goods, as seen from carloadings figures, was greater than a year ago.

Wholesale prices continued to decline during the second week of January. Loans and discounts of Federal reserve member banks at the end of the second week were smaller than at the end of the preceding week but larger than a year ago.



Wiggins Roofs on refinery tanks. Above test was run on a similar installation.

Only 195 gallons evaporation loss in eleven days

The test charted above was conducted by a large refining company to determine the actual evaporation loss from working tanks equipped with Wiggins Roofs. It shows that the loss from two 95-foot diameter tanks during 11 days was only 195 gallons.

The tanks were connected through a pump and their contents pumped back and forth at a rate of 29,100 barrels per day. Approximately 320,000 barrels were handled during the 11 day test period.

The oil used was extremely volatile, having an evaporation tendency (vapor pressure) about twice that of motor gasoline. The engineers working on the test had complete information on evaporation losses from working tanks of standard construction. They estimated that the loss would have been 20,000 gallons had this operation taken place in gastight tanks. The Wiggins Roof loss was less than one per cent of that amount.

Wiggins Roofs can be installed in your present tanks as well as in new tanks. Give us the diameter and location of several of your tanks. We will be glad to quote you our price on equipping them with Wiggins Roofs.

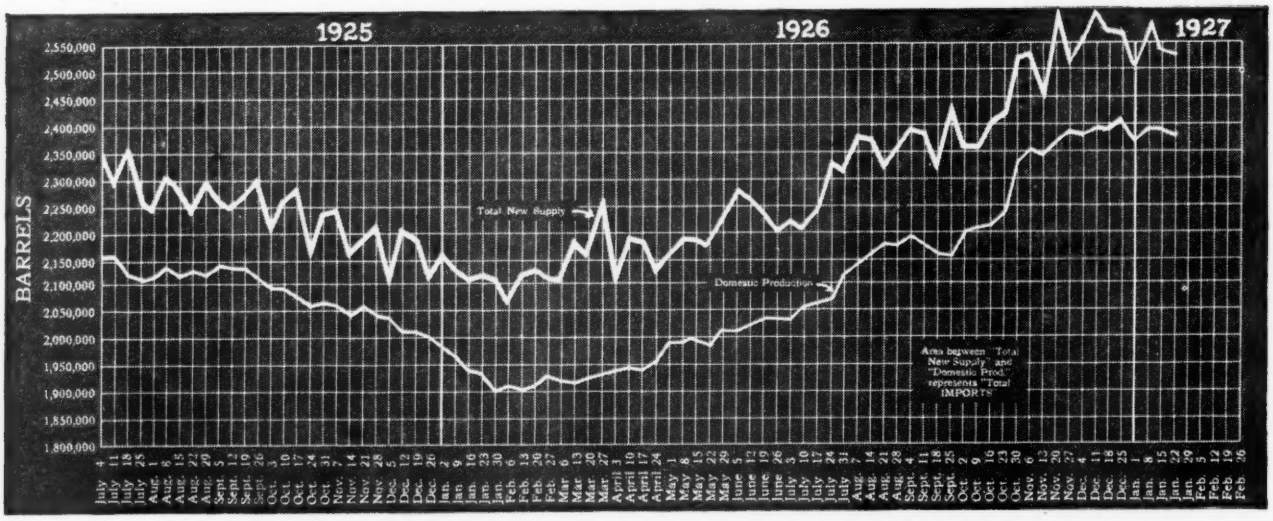
CHICAGO BRIDGE & IRON WORKS

Dallas, 1639 Praetorian Bldg.
San Francisco, 1060 Rialto Bldg.
Cleveland, 2206 Union Trust Bldg.
Chicago, 2125 Old Colony Bldg.
New York, 3145 Hudson Terminal Bldg.
Atlanta, 1050 Healey Bldg.
Havana, Cuba, Apartado 2507

WIGGINS ROOF

NPN 1-26 Gray

Daily Average Crude Oil Production and Imports



Daily average gross output of United States, by fields, for week ending with dates below, as compiled by American Petroleum Institute

Production Summary

	Jan. 22	Jan. 15
Production east of Rockies	1,732,050	1,739,500
Decrease		7,450
Total Production in U. S.	2,388,650	2,391,000
Decrease		2,350
Crude Oil Imports	145,143	156,000
Decrease		10,857
Total Crude Supply	2,533,793	2,547,000
Decrease		13,207

OKLAHOMA

	Jan. 22	Jan. 15
North Braman	10,350	12,450
South Braman	4,300	4,750
Blackwell	4,150	4,150
Hubbard	7,400	7,100
Thomas	1,850	1,950
Tonkawa	26,350	27,250
Garber	19,150	19,350
Burbank	47,250	48,100
Osage, outside Burbank	36,200	36,150
Watchorn	2,700	2,700
Cushing	21,500	21,500
Yale Jennings	12,450	12,450
Davenport	4,400	4,550
Bristow-Slick	27,450	27,400
North Okmulgee	17,250	17,250
Lyons-Deaner	4,400	4,500
Stroud	1,600	1,650
Cromwell	13,550	13,950
Papoose	8,100	8,200
Wewoka	23,000	23,750
Seminole	181,000	172,700
Duncan district	6,900	7,000
Graham	9,000	9,000
Fox	1,900	1,900
Healdton	15,000	15,100
Scholem Alechem	11,200	10,750
Hewitt	10,400	10,500
Earlsboro	9,150	9,150
Others	59,700	59,400
Total Oklahoma	597,650	594,650
Increase		3,000

KANSAS

	Jan. 22	Jan. 15
Greenwood County	43,900	44,500
Florence-Covert	1,950	1,950
Peabody-Elbing	3,950	3,950
Eldorado-Towanda	13,300	13,300
Augusta-Fox-Bush	4,800	4,850
Rainbow Bend	3,150	3,250
Russell	3,900	4,100
	13,650	14,000
Others	29,200	29,000
Total Kansas	117,800	118,900
Decrease		1,100

NORTH LOUISIANA

	Jan. 22	Jan. 15
Homer	5,250	5,250
Haynesville	8,350	8,400
Caddo, light	9,950	9,950
Caddo, heavy	3,600	4,050
De Soto, Red River	4,050	4,100
Elm Grove	650	650
Bellevue	1,550	1,650
Cotton Valley	6,550	6,550
Urania	13,600	12,700
Total North Louisiana	53,550	53,300
Increase		250

ARKANSAS

	Jan. 22	Jan. 15
El Dorado	6,150	6,150
Smackover, light	12,450	12,500
Smackover, heavy	103,150	105,700
Stephens	1,400	1,450
Nevada	1,800	1,850
Others	300	300
Lisbon	5,600	5,600
Total Arkansas	130,850	133,550
Decrease		2,700

TEXAS (OUTSIDE GULF COAST)

Panhandle District

	Jan. 22	Jan. 15
Hutchinson County	115,350	124,200
Gray County	6,400	9,750
Carson County	10,100	5,000
Wheeler County	1,500	1,450
Others	50	50
Total, Panhandle Dist.	133,400	140,450
Decrease		7,050

NORTH TEXAS

	Jan. 22	Jan. 15
Burkburnett	14,650	14,700
Electra	16,150	16,200
Iowa Park and K-M-A	5,050	5,100
Wilbarger	15,350	15,850
Archer County	34,700	34,800
Montague-Cooke	13,700	13,650
Others	1,050	1,050
Total North Texas	100,650	101,350
Decrease		700

WEST CENTRAL TEXAS

	Jan. 22	Jan. 15
Stephens County	10,350	10,300
Eastland-Desdemona	5,850	5,900
Brown County	17,400	16,850
Coleman County	1,700	1,700
Callahan County	6,250	5,750
Shackelford County	14,900	15,300
Young County	8,950	8,900
Throckmorton County	2,850	2,400
Palo Pinto County	450	450
Jones County	2,050	1,850
Mitchell-Scurry Counties	3,950	3,950
Howard County	2,350	1,500
Reagan County	28,650	28,450
Crane-Upton Counties	29,600	29,800
Others	3,200	3,100
Total West Cent. Tex.	138,500	136,200
Increase		2,300

EAST CENTRAL TEXAS

	Jan. 22	Jan. 15
Mexia	11,750	11,600
Currie	700	700
Richland	1,400	1,400
Wortham	5,750	5,900
Corsicana-Powell	23,600	23,800
Nigger Creek	8,400	9,000
Total East Cent. Texas	51,600	52,400
Decrease		800

SOUTHWEST TEXAS

	Jan. 22	Jan. 15
Luling	17,950	18,150
Lytton Springs	2,850	2,900
Somerset	1,900	1,850
Laredo District	15,600	15,800
Piedras Pintas	300	450
Others	700	650
Total Southwest Texas	39,300	39,800
Decrease		500
Total Texas (Outside Gulf Coast)	463,450	*470,200
Decrease		6,750

GULF COAST

Coastal Texas

	Jan. 22	Jan. 15
West Columbia	12,800	11,700
Damon Mound	850	950
Big Creek	2,300	2,400
Boling	2,050	2,800
Blue Ridge	2,700	3,100
Pierce Junction	7,950	4,800
Humble	4,300	4,300
Goose Creek	7,950	7,800
South Liberty	4,650	4,400
Hull	18,850	19,300
Saratoga	1,200	1,300
Batson	1,650	1,750
Sour Lake	4,650	4,600
Spindletop	80,600	88,550
Orange County	6,500	6,300
Others	3,350	2,750
Total Coastal Texas	162,350	166,800
Decrease		4,450

Coastal Louisiana

	Jan. 22	Jan. 15
Vinton	5,800	5,800
Lockport	3,200	3,350
Evangeline	1,450	1,300
Edgerly	600	550
Others	2,250	1,150
Total Coastal Louisiana	13,300	12,150
Increase		1,150
Total Gulf Coast	175,650	178,950
Decrease		3,300

ROCKY MOUNTAIN

Wyoming

	Jan. 22	Jan. 15
Salt Creek	42,550	39,250
Grass Creek	2,850	3,000
Elk Basin	750	800
Big Muddy	3,050	2,950
Lost Soldier	4,600	4,850
Rock River	3,000	2,850
Lance Creek	750	750
Teapot Dome	600	1,000
Others	1,450	1,550
Total Wyoming	59,600	57,000
Increase		2,600

Montana

	Jan. 22	Jan. 15
Cat Creek	2,450	2,450
Sunburst	10,000	10,000
Others	150	150
Total Montana	12,600	12,600

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For the Oil and Gas Industry

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"IDECO" Standard Structural Steel Buildings have been designed particularly for the oil and gas industry.

Rust Proof and Fire Resisting, of unit construction, easy to erect and dismantle, 100 per cent salvable and of permanent design—"IDECO" Standard Buildings are offered in a number of combinations that can be adapted to any requirement of the oil industry.

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for buried or exposed pipe lines

Applying NO-OX-ID to the bare metal with brush and rubbing down with canvas on a Louisiana pipe line.

Applying NO-OX-IDized Wrapper over the coating of NO-OX-ID. Much lower in cost than any previous method — and much more efficient.

Applying wrapper over section of pipe after skid has been removed; preparing to lower pipe into ditch.

NO-OX-ID has an exceptional record for protection against rust and corrosion. NO-OX-IDized Wrapper is a distinct improvement in application which may be expected to further extend the life of the line by a period of years. Inquiries invited.

Dearborn Chemical Company

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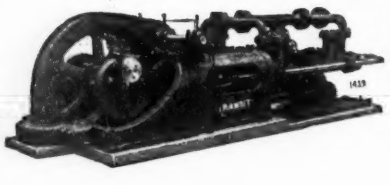
TRANSIT PUMPS

for large and small pipe lines

Descriptions on Request.



NATIONAL TRANSIT PUMP & MACHINE CO.

OIL CITY, PA.

District Offices: New York, Pittsburgh, Tulsa, Cleveland, Houston and Denver, Philadelphia.

Colorado

	Jan. 22	Jan. 15
Moffat (Craig)	2,900	2,900
Fort Collins	3,900	4,000
Florence	450	450
Others	600	550
Total Colorado	7,850	7,900
Decrease		50

New Mexico

Artesia	2,250	2,300
Hogback	800	650
Table Mesa	400	400
Rattlesnake	2,100	1,100
Total New Mexico	5,550	4,450
Increase		1,100
Total Rocky Mountain	85,600	81,950
Increase		3,650

CALIFORNIA

Santa Fe Springs	47,000	43,000
Long Beach	93,000	93,000
Huntington Beach	93,000	92,000
Torrance	26,000	26,000
Dominguez	19,000	19,000
Rosecrans	12,500	12,500
Inglewood	39,000	39,000
Midway-Sunset	90,500	90,500
Ventura Avenue	54,300	55,000
Seal Beach	10,300	9,500
Others	172,000	172,000
Total California	656,600	651,500
Increase		5,100

EASTERN

(Including Ill., Ind., Ky., Ohio, W. Va., Pa., and N. Y.)	107,500	108,000
Decrease		500

*Revised.

Six Finds Important To Gulf Coast

(By Telegraph)

HOUSTON, Jan. 24.—Six discoveries bearing on future oil production of the Gulf Coastal region were made last week. The most important was the completion of Gulf Refining Co. of Louisiana's No. 4, Lutcher and Moore test, on Starks Dome, six miles from Vinton, La., which came in making 2500 barrels of heavy lubricant crude through three-fourths inch choker at about 3415 feet. Gulf and Standard of Louisiana own virtually all Starks Dome acreage, insuring conservative development.

Gulf's No. 6 Smith, on south flank of High Island Dome, Galveston county, Texas, which made 1000 barrels initial production at 2940 feet is the second commercial well, but by far the best completion in the field.

Gulf's 12th test on Fannett Dome, Jefferson county, Texas, made 50 barrels on completion at 5070 feet. Preceding Fannett tests were all failures.

Gulf's No. 1 Thompson extended the Sour Lake flank production 1000 feet southwest when it came in for 1000 barrels at 3050 feet.

Big commercial production was found for the first time on the east flank of Barbers Hill Salt Dome, in Chambers county, when the B-Three Kirby test of Mills, Bennett and the Humphreys Corp. made 1500 barrels initial production at 4375 feet.

A new salt dome a few miles north and east of Hackberry Island, in Calcasieu Parish, La., was found by use of geophysical instruments. It has not been tested with the drill.

Seminole Production Carries State to Nearly 600,000 Bbls. Daily

By A. F. Hinton
N. P. N. Staff Writer

TULSA, Jan. 22

OKLAHOMA production last week again set a new record of 597,250 barrels a day, according to National Petroleum News estimate. This was a gain of 3070 barrels over the preceding week. Every field in the state showed a decided decline, except Seminole. That field, however, increased its output enough to offset other losses.

Seminole also broke its previous high record, averaging 181,000 barrels a day, an increase of 8320 barrels over the week before. This is production of Seminole proper, Searight and the 8-6 pool, and does not include Earlsboro, which is making slightly more than 9400 barrels a day. Thus the Seminole district is making 190,400 barrels daily, all from pools unknown six months ago.

The Seminole area continues the center of production and drilling activity in the state. The only outstanding wildcat test of particular interest is that of the T-P Coal & Oil Co. and Franklin Oil Assoc., in Logan county, which has been several times reported in this paper. This well was tubed and put on the pump the past week, and at last reports was making about 83 barrels of oil and some water, in sand from 4088 to 4090 feet.

Although not much of a well from the standpoint of production, it is likely it will stimulate development in its vicinity, although no locations near it have been definitely announced. The well, No. 1 Moore, is in the SWc Ne SE of 28-18-4W, near the town of Lovell, and about 25 miles from the nearest production.

At Seminole, several good wells were brought in during the week, boosting production to a new high figure, and some old wells were made to increase their production by shooting and gas-lift operations. The main "play" now is southward, especially in township 8-6, where the two wells of the Indian Territory Illuminating Oil Co. are making together about 11,000 barrels daily. These wells have been deepened a few feet at a time, and responded with increased output each time.

IN the past three weeks, since these two wildcats came in, 105 operations have been started in township 8-6, in addition to 12 other wells already drilling at that time. In this township there are now 19 locations, 76 rigs up, and 10 wells drilling at depths above 2000 feet. Thus does the oil industry go after the elusive fluid when pioneers have pointed the way. The wells started up since these discoveries, practically all in three sections, or three square miles, will likely cost $6,000,000, and not one of them has absolute assurance it will produce oil.

In all, there are 458 operations under way in the Seminole district, of which 114 are drilling below 3700 feet, and should be completed within two to three weeks. There are 60 wells between 3100 and 3700 feet in depth and 54 between 2000 and 3099 feet. Wells recently started include 73 drilling at lesser depths than 2000 feet, 127 rigs up, and 30 locations.

Seminole proper continues to lead in development with 211 operations, of which 97 are below 3700 feet and 33 between 3100 and 3700 feet. The Searight pool, with 44 total operations, has 10 wells below 3700-feet and Earlsboro, with 86 operations, has six that have reached that depth or gone beyond it. The 8-6 pool having just started up, has only one well below 3700 feet and four between 3100 and 3700 feet, out of 117 total operations.

Road conditions in the Seminole area have been bad the past week and are due to get worse, if today's cold, snowy weather is an indication of what is in store. Hauling material into the 8-6 district has not only cut the roads up, but has also caused much congestion, sometimes causing traffic jams requiring hours to untangle. The field men only work the harder to get stuff through, and there has been no thought of slowing up and waiting for better weather. The desire of each operator is to get the wells started at the earliest possible moment.

WHEN the roads are bad trucks hauling pipe usually go as far as they can with the load, and unload on the side of the road, the pipe to be left there until conditions are such it can be picked up and its journey toward the location resumed. This practice, according to reports, caused a serious drilling accident in the Earlsboro field, that may mean junking a well that had been drilled to within 80 or 90 feet of the Wilcox sand.

The well is the Amerada Petroleum Corp. No. 1 Anderson, in the NWc of 15-9-5, an east offset to the Wilcox sand discovery well in the Earlsboro field. Starting up soon after the discovery came in last November, the Amerada well would have been the second to get the Wilcox if it had been

Drilling Operations in Oklahoma, Kansas and Texas

	Jan. 22—Week Ended—					Jan. 15				
OKLAHOMA	Loc.	Rigs	Drg.	S.D.	Total	Loc.	Rigs	Drg.	S.D.	Total
Burbank	8	16	27	...	51	6	15	29	...	50
Other Osage	9	8	32	2	51	10	5	38	3	56
Bristow-Cushing	13	12	100	12	137	10	20	99	9	138
North Oklahoma	10	19	113	40	182	8	16	105	42	171
South Oklahoma	19	29	201	40	289	17	19	181	36	253
Muskogee	..	15	46	11	76	...	15	41	14	70
Okmulgee-Bristow	4	56	126	18	204	3	59	114	27	203
Tonkawa	1	...	5	4	10	1	...	6	4	11
Seminole Dist.	57	91	413	24	585	43	76	372	37	528
Total Oklahoma	121	246	1063	151	1581	98	225	985	172	1480
KANSAS	64	71	234	93	462	49	81	210	115	455
TEXAS										
Central Texas	..	148	266	146	560	...	165	255	181	601
East Texas	..	...	14	11	25	...	4	8	15	27
Panhandle	..	102	251	101	454	...	110	244	100	454
N. Central Texas	..	64	94	46	204	...	57	98	39	194
W. Texas	..	78	139	35	252	...	73	175	54	302
Total Texas	..	392	764	339	1495	...	409	780	389	1578
GRAND TOTAL	185	709	2061	583	3538	147	715	1975	676	3513

Drilling Wells Seminole District, as of Jan. 22, 1927

Field	Locations	Rigs	Less than 2000'	2000' to 3099'	3100' to 3700'	Below 3700'	Total
Seminole*	9	17	29	26	33	97	211
Searight**	1	14	8	4	7	10	44
Eight-Six	19	76	10	7	4	1	117
Earlsboro	1	20	26	17	16	6	86
Totals	30	127	73	54	60	114	458

*Seminole includes all of township 9-6, except sections 2, 3, 4 and 10.
**Searight includes all of township 10-6, and sections 2, 3, 4 and 10-9-6.

Completions in Oklahoma and Kansas, Week Ending Jan. 22

OKLAHOMA

Carter County

Company	Well No.	Location	Depth	Initial Prod.
Simpson-Fell	1	NWc 11-2-3W	2137–2657	310

Creek County

Company	Well No.	Location	Depth	Initial Prod.
Shaffer	20	CEL NE SE 7-18-7E	2335–2378	55
Tibbens	1	SWc NE 28-15-8	1550–1554	1M
Olean	2	SEc NE NE 30-14-8	3422–3489	533
Pure	4	NWc SE NE 30-14-8	3379–3408	1426
Krumrei et al	1	SEc NE NE 34-18-9	1932–1958	25
Wilcox	1	SEc NW SW 3-17-9	2020–2046	27
Dixie	3	NEc SW SW 5-17-10	2998–3018	45
Stover et al	1	SWc 9-17-10	2398–2424	50
Wilson	1	SWc 28-17-10	2703–2726	25
Mid-Cont	1	SEc SW 4-14-10	3151–1363	125
Atlantic	2	NEc NW SE NW 16-14-10	3233–3247	310
Slick	3	SWc NW SE 32-14-10	3367–3394	200
Riverside	1	SWc SE 8-18-7	T.D.2755	Dry
Davis et al	1	NEc SE NW 18-15-9	T.D.3765	Dry

Grady County

Company	Well No.	Location	Depth	Initial Prod.
Carter	1	NEc SW 21-3-5W	1935–1946	20
Clark-Cowden	1	SEc SW NE 21-3-5W	1565–1570	160

Hughes County

Company	Well No.	Location	Depth	Initial Prod.
Minnehoma	4	NEc 1-9-9E	3815–3864	320
Gypsy	1	NWc SE 5-8-9E	3338–3340	60M
Ashe et al	1	NWc 13-9-8E	T.D.3603	Dry

Kay County

Company	Well No.	Location	Depth	Initial Prod.
Carter et al	2	SEc NE SW 17-29-1W	1455–1494	44M
Polling et al	2	SWc SE NE 5-27-1W	2396–2398	7½ M
Blackwell	4	CEL NE SW 10-27-1W	3422–3431	35
Marland et al	1	SWc NW 6-25-1W	3637–3643	1060
Marland et al	1	SWc NW NW NW 7-26-1W	3561–3601	1350
Comar	7	NWc SE SW 5-28-1W	T.D.3882	Dry
Comar	6	NEc SW SW 5-28-1W	T.D.2475	Dry
Ostot	1	CEL NW NW SE 10-27-1W	T.D.1512	Dry
Gypsy	1	NEc NW 33-25-1W	T.D.4512 OWD	Dry
Amerada	1	C SW NE 36-25-1W	T.D.2042 OWD	Dry

Lincoln County

Company	Well No.	Location	Depth	Initial Prod.
Barnsdall	1	SEc SW 8-12-5E	T.D.5324	Dry
Pure	1	NEc SE 21-14-5	3974–3982	5

Okfuskee County

Company	Well No.	Location	Depth	Initial Prod.
Humphrey et al	1	SWc NE 23-11-11	2433–2437	35
Robinson	1	SE NE NW 2-10-9	T.D.4065	Dry
Schrock et al	1	NWc SE SE 26-10-10	T.D.3875	Dry
Magnolia	1	SEc SW NE 16-13-8	T.D.4250	Dry

Okmulgee County

Company	Well No.	Location	Depth	Initial Prod.
Stout	1	NEc 30-16-14	1724–1769	35
Martin et al	3	CSL NE SE 34-14-12	1947–1952	100
Neil et al	4	NEc NW SE 17-14-13	1172–1230	20
Harsha et al	1	NEc SE NW 34-16-14	T.D.1975	Dry

Osage County—Burbank

Company	Well No.	Location	Depth	Initial Prod.
Phillips	1	SWc SE 1-27-5E	2948–3005	100
Gypsy	1	SWc NE 7-27-6	2968–3015	175
Phillips	6	NEc SW NW 7-27-6	2943–2982	200
Phillips	7	NWc SE SW 21-26-6	2887–2932	140
Marland et al	2	NWc NE NW 3-26-6	T.D.2851	Dry

Osage County

Company	Well No.	Location	Depth	Initial Prod.
Devonian	1	SWc 35-25-11	T.D.2075	Dry
Barnsdall	1	CSL SE 11-24-8	T.D.2671	Dry
Wentz-Miller	3	SEc NE NW 30-23-12	T.D.2582	Dry
Mitchell	7	SEc NW NW 7-21-9	T.D. 550	Dry
S. S. Home	1	NWc SE SE NW 14-20-10	T.D.2310	Dry
Oliphant	5	NEc SW SE SE 19-25-8	1125–1133	8
Ind. Terr	351	NWc SW 27-25-8	2435–2445	2M
Texas	9	SEc SW NE 30-25-8	2447–2481	300
Delmar	1	SWc SE 17-23-10	2500–2504	1960
Mid-Cont	17	CWL E½ SE 18-22-10	1799–1882	15
Tidal	11	CSL N½ S½ SW 15-21-12	1296–1338	15
Tidal	6	SW NW NW 22-21-12	1305–1329	5
Pioneer	10	NEc NW 5-20-11	1692–1710	65
Keener	25	SWc SE NW NE 15-29-10	994–1018	25

Seminole County—Seminole

Company	Well No.	Location	Depth	Initial Prod.
Carter	1	NEc 4-9-6E	4315–4330	3040
Amerada	2	NEc NW NE 23-9-6	4143–4163	249
Carter	2	NEc SE 23-9-6	4101–4114	2105
Ind. Terr	3	NWc SE SE 23-9-6	4100–4115	727
Tidal	5	NEc SW SE 23-9-6	2978–2999	350
Gypsy	8	NEc NW NW 24-9-6	4150–4168	2075
Ind. Terr	5	SEc NW SE 26-9-6	4025–4095	635
Carter	1	NEc SE 34-9-6	4075–4123	3890
Ind. Terr	1	SEc NQ 15-8-6	4046–4065	4547
Prairie	3	SEc 33-10-6	4305–4319	3500
Continental	11	CSL SW SE 33-11-8E	T.D.1900	Dry

Sequoyah County

Company	Well No.	Location	Depth	Initial Prod.
Sequoyah	1	C SW NE 32-11-25	2933–2940	5M

Stephens County

Company	Well No.	Location	Depth	Initial Prod.
Commercial	4	SWc 12-2-8W	2054–2056	25

Texas County

Company	Well No.	Location	Depth	Initial Prod.
Valerius	1	NWc SW 18-2N-12E	T.D.4006	Dry

Tulsa County

Company	Well No.	Location	Depth	Initial Prod.
Superior	5	CSL SE SW 6-19-10	2068–2080	50
Holmes et al	1	NWc NE 36-19-10	T.D.2520	Dry
Holmes et al	1	SWc 12-17-13	T.D.2146	Dry

Waggoner County

Company	Well No.	Location	Depth	Initial Prod.
Hale-Williams	1	SWc NW NE 1-15-17	T.D.2061	Dry
Sommerville	1	SWc NW NE 17-16-17	1260–1278	6M

KANSAS

Butler County

Company	Well No.	Location	Depth	Initial Prod.
Allison et al	1	NEc NW NE 28-25-4E	2585–2605	60
Phillips	4	SEc NW NW 13-27-7	2632–2676	300
Mid-Kansas	3	NWc SW SW 3-28-6	3050–3064	75
Kismet et al	1	SWc SE 28-23-8	T.D.2775	Dry
Boyle et al	1	NEc 11-26-3	T.D.3145	Dry
Goen et al	1	NWc SW 12-28-5E	T.D.3146	Dry
Johnson et al	5	SWc NW SW 3-28-6	T.D.3093	Dry

Coffey County

Company	Well No.	Location	Depth	Initial Prod.
Derby	2	SWc SE NW 8-22-14	T.D.1772	Dry
McDougal et al	1	NEc NW SW 2-23-13	T.D.1830	Dry

Cowley County

Company	Well No.	Location	Depth	Initial Prod.
Prairie	1	SWc NE NW 8-31-6	T.D.2835	Dry
Twin State	1	SWc SE SE 21-31-4	2390–2395	115
Twin State	2	SWc SE 21-31-4	2363–2371	85
Hull	3	NEc NW SE 15-32-4	T.S.2991	.2M
Tidal et al	2	NWc SW SW NE 15-32	2504–2525	80
McNabb et al	1	NEc NW 22-32-4	2297–2374	50

Elk County

Company	Well No.	Location	Depth	Initial Prod.
Union Gas	20	SEc SW SW NE 14-31-10	1610–1532	450
Union Gas	21	SWc SE SE NW 14-31-10	1613–1636	400

Greenwood County

Company	Well No.	Location	Depth	Initial Prod.
Nolan et al	1	SWc SE SW 15-22-13	T.D.2282	Dry
Laughlin et al	1	NEc SE SE 13-24-10	T.D.2201	Dry
Morgan et al	1	SWc NE 26-25-12	T.D.1803	Dry
Swartz et al	1	NEc NW NE 23-22-11	1840–1888	230
Texas	6	SEc SW NW 16-23-11	1928–1989	50
Skelly	2	SEc SW SE 25-24-10	1905–1923	25
Empire	2	SWc SE SE 18-24-11	1832–1837	250
Smith et al	1	SEc 21-26-9	2263–2299	40

Kingman County

Company	Well No.	Location	Depth	Initial Prod.
Phillips	1	SEc NW NW 21-29-9W	T.D.4227	Dry
Vickers et al	1	C NW 35-30-9W	T.D.4000	Dry

Russell County

Company	Well No.	Location	Depth	Initial Prod.
Kettle et al	1	SWc NW NE 6-14-12W	T.D.3605	Dry

Sedgwick County

Company	Well No.	Location	Depth	Initial Prod.
Reynolds et al	1	SEc SW 2-29-2E	T.D.3355	Dry

Sumner County

Company	Well No.	Location	Depth	Initial Prod.
Roxana	1	CWL NW NE SW 25-31-2E	1849	Dry

Wilson County

Company	Well No.	Location	Depth	Initial Prod.
Statts et al	1	SWc SE NE 25-27-13	T.D.1507	Dry

Woodson County

Company	Well No.	Location	Depth	Initial Prod.
Little 7	2	SEc NE NE 30-23-14	1618–1646	60
Fields-Cross	2	CEL NW SE 9-25-14	1490–1526	½M

completed on schedule time. When casing was being hauled to this location, much of it was unloaded along the road, as described above.

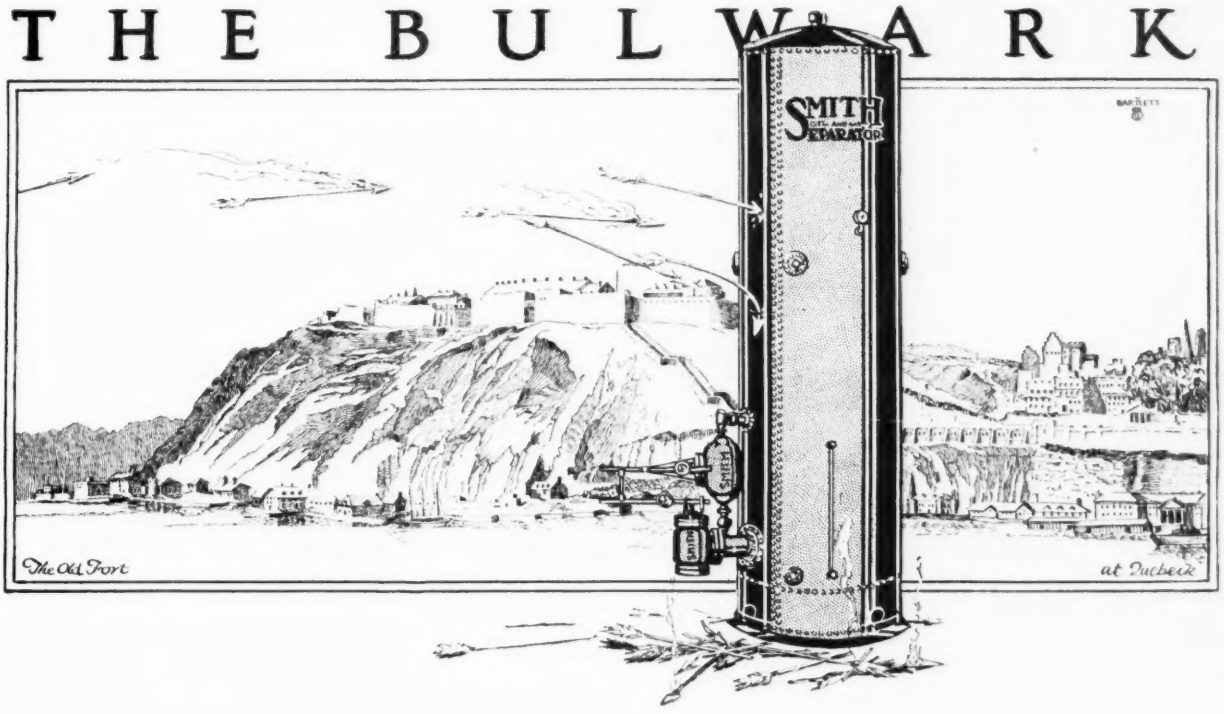
When the pipe was gathered again and loaded on trucks, a stray joint of old pipe, which had been welded together in the middle, was picked up or somehow mixed in with the casing. It was run into the well without being noticed, and pulled apart at the weld when the strain came on it. This resulted in 3540 feet of 6⅝-inch casing dropping about 600 feet to bottom of hole, causing a bad fishing job which is still in progress. The moral is: Had the roads been good, this well would probably be producing from the Wilcox sand today.

The feature of the week in Seminole was performance of T. B. Slick's well, No 1 Franks, which has been making a remarkable record for production. It was drilled in Nov. 11, 1926, and has never made less than 5000 barrels a day, its total output having been about 400,000 barrels to date. Initial production was 7300 barrels. Recently, when its production got down to around 5000, it was shot with 40 quarts. This shot increased the output, and a regular shooting program was started. The well has been given a shot every day or two for the past week, and at last reports was making 7530 barrels a day. It has been flowing steadily, and not by heads, which made it possible to get the shots in, and apparently the debris from each shot has been forced out of the hole by the heavy flow.

Since this well came in, Slick has drilled two others on the same lease down to the sand, but neither gives promise of being as big as the first. His No. 2 Franks, in the SWc NW NE of 35-9-6, got the Wilcox sand at 4045 feet and at total depth of 4076 feet has a hole full of oil but does not flow. At last reports, it was fishing for swab. Slick No. 3 Franks, in the NWc SW NE of 35-9-6, is swabbing about 75 barrels in the Wilcox sand from 4020 to 4036 feet. It seems to be characteristic of Seminole that the first wells, which came in for from 5000 to 10,000 barrels a day, pretty well took the "head" off the field, so that the second crop of wells make comparatively light producers.

It was in this section of the field, the south end of Seminole proper, that Sinclair drilled in two big wells in November, about the same time the first

THE BULWARK



In days of old, when the country was new, pioneers built for protection against the unseen enemy.

Protection against property loss—against fire—for the conservation of property—was the idea foremost in the mind of these pioneers.

In the oil country the necessity for protection against hazards of fire, property loss—the necessity for conservation of wealth—demand that every precaution be taken.

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TEXAS OFFICES:
924 Post Dispatch Bldg., Houston, Texas
1414 F. & M. Bank Bldg., Fort Worth, Texas

Completions in N. C. & E. Texas & Panhandle, Week Ending Jan. 22

Company	Well Farm	Location Survey	Depth	Initial Prod.
Archer County				
Chaunchy et al	1-Miller	ATNC	1584–1588	40
Underwood	1-Wilson	H&TC	1622–1624	35
Marland	16-Turberville	Carson	1486–1515	53
American	9-Turberville	Carson	1481–1483	35
Pet. Prod	1-Turberville	Carson	1466–1474	15
Marland	15-Turberville	Carson	T.D.1512	Dry
Hines	1-Ward	Ramsey	T.D.1252	Dry
Brown County				
Montex	1-Newton	Harris	997– 999	5
Texas	11-Hickman	Benson	1170–1190	22
Humble	9-Hickman	Benson	1214–1246	100
Texas	9-Hickman	Benson	1219–1240	25
Humble	5-Armstrong	Delgado	1178–1187	200
McCarter	2-Leatherwood	Delgado	1170–1255	13
Danciger et al	4-Haynes	Delgado	1182–1188	5
Roxana	2-Newton	Mitchell	1249–1273	258
Gillespie	9-Newton	Swain	T.D.1309	22
Humble	8-Wooldridge	ET	T.D.1273	20
Texas	3-Gaines	Miller	1322–1332	12
Mid-West	18-Suttles	Mitchell	1147–1158	40
Williamson et al	10-Keller	Mitchell	1143–1166	3
Barbara	1-Willow	Nance	1333–1339	288
Amerada	13-Fry	Stubblefield	1281–1303	217
Amerada	14-Fry	Stubblefield	1304–1322	5
Henshaw et al	6-Lowe	Stubblefield	1284–1298	900
Lester	16-Fry	Chaudoin	1332–1341	200
Rex Pyramid	2-Fry	Stubblefield	1265–1275	1080
Sinclair	2-Fry	Stubblefield	1278–1298	1080
Texas	4-Pugh	Pugh	1308–1337	112
Bowers et al	2-Cason	Wilson	1523–1560	100
Cunningham et al	1-Teague	Miller	1280	Dry
Holleran et al	1-Eddington	Millican	1288	Dry
Rex Pyramid	1-Hayes	Bannister	1880-T.D.	Dry
Charter	3-Andrews	Bannister	T.D.1335	Dry
Roxana	2-Whiteside	Bannister	T.D.1340	Dry
Shadbold et al	1-Cappie	Williams	T.D.1365	Dry
Atlantic	1-McKnight	Carrier	T.D.1160	Dry
Lloyd et al	1-Conway	Smith	T.D. 540	Dry
Carson County—Panhandle				
O & R	1-Burnett	I&GN	T.D.3052	15M
Callahan County				
Evans	1-Higgins	D&DA	T.D.1100	Dry
Moore et al	1-Caldwell	SP	T.D.2–16	Dry
Sinclair	1-Dancy	Dancy	T.D.3385	Dry
Mook et al	1-Baum	Vegal	1650–1656	30
Coleman County				
Moore	1-Curry	Williams	T.D.1610	Dry
Eastland County				
Tex-Pac	28-Butler	York	3450–3470	10
Ark. Fuel	9-Connelee	Ussury	1234–1232	8
Fisher County				
Reiney et al	1-Mayberry	T&BN	T.D.1500	Dry
Gray County—Panhandle				
Texas	2-Holmes	I&GN	3108–3186	10
Gray County				
Gulf	6-Reynolds	I&GN	2885–2911	40
Gulf	8-Reynolds	I&GN	3010–3020	430
Gulf	9-Reynolds	I&GN	3008–3030	172
Sun	3-Reynolds	I&GN	3007–3023	30
Sun	4-Reynolds	I&GN	3067–3074	200
Hutchinson County—Panhandle				
Phillips	7-Martin	H&OB	2725–2932	250
Gulf	1-Sanford	H&TC	2661–2758	25M
Paramount	1-Sanford	H&TC	3005–3006	230
Phillips-Elva	2-Whittenburg	Tomlinson	2705–2795	300
Phillips-Elva	10-Whittenburg	Tomlinson	2815–2893	1200
Devonian	2-Johnson	H&TC	2910–2976	560
Marland	3-Whittenburg	M&C	2855–2883	50
Phillips-Finklea	3-Johnson	Whitley	2948–2980	125
Phillips-Patten	9-Johnson	Whitley	2890–2938	750
Phillips-Pattsburg	1-Whittenburg	H&TC	2907–2945	800
Phillips-Pattsburg	4-Whittenburg	H&TC	2864–2901	300
McMan	9-Holmes	Servey	2704–2758	450
Phillips-Lansing	4-Kingsland	D&SE	2705–2805	150
Grimes et al	1-Johnson	A&B	2998–2985	210
Ward et al	2-Cockrell	D&SE	2911–3006	150
Jones County				
Gibson et al	1-Sears	Dewitt	T.D.3005	Dry
Limestone County				
Humble	1-Gunter	H&TC	T.D.2733	Dry
Montague County				
Continental	13-Bouldin	Chambliss	1094–1112	40
Pure	1-Keek	Donoho	T.D.2970	1M
Texas	7-Maddox	Thompson	864– 872	52
Texas	8-Maddox	Thompson	865– 883	45
Continental	22-Rowland	Chambliss	1050–1095	33
Continental	19-Howard	Chambliss	982– 984	35
Continental	2-Loy	Donoho	1835	Dry
Moore County				
Phillips	1-Sneed	Jones	T.D.3045	35M
Palo Pinto County				
Chestnut-Smith	1-Seaman	Archer	T.D.3835	Dry
Shackelford County				
Sinclair	8-Nail	ET	T.D.2008	Dry
Sinclair	7-Nail	ET	T.D.1805	Dry
Rosier-Pendleton	1-Cook	ET	T.D.2050	Dry
Rosier-Pendleton	23-Cook	ET	T.D.1340	Dry
Rosier-Pendleton	24-Cook	ET	T.D.1385	Dry
Rosier-Pendleton	26-Cook	ET	T.D.1340	Dry
Harris	1-Mathews	ET	T.D.1230	Dry
Rosier-Pendleton	22-Cook	ET	1155–1163	55
Rosier-Pendleton	7-Cook	ET	1124–1144	300
Rosier-Pendleton	23-Cook	ET	1325–1343	25
Heck et al	1-Moberly	TP	1423–1434	50
Stephens County				
Tex-Fidelity	5-Pratt	TP	1943–2020	150
Throckmorton County				
Gulf	1-Lee	TE&L	3900–3980	50
Wichita County				
O'Neil	3-Ferguson	Specht	1815–1850	1000
Wilbarger County				
Humble	12-Waggoner	H&TC	2370–2401	175
Milham	3-Waggoner	H&TC	2423–2426	20
Milham	17-Waggoner	H&TC	2380–2390	214
Milham	18-Waggoner	H&TC	2389–2396	185
Phillips	2-Waggoner	H&TC	824– 833	1M
Phillips	6-Waggoner	H&TC	2339–2350	150
Phillips	7-Waggoner	H&TC	2361–2362	70
Milham	7-Waggoner	H&TC	2541–2555	60
Milham	2-Waggoner	H&TC	T.D.2600	Dry
Young County				
Chesney	2-Bearden	Hopkins	1068–1097	65
Texas et al	1-Jeffries	TEL	T.D.1012	Dry
Minnich et al	1-Williams	TEL	T.D. 920	Dry

Completions in North Louisiana and Arkansas, Week Ending Jan. 20

Company	Well	Location	Depth	Yield
Caddo Parish—Vivian				
Gulf Refining Co	Ferry Lake No. 261	22–20–16	2265	75
Gulf Refining Co	F.E. Wemple et al No.4	14–20–15	2263	35
Victor Wenzel	Hunsicker No. 3	15–20–15	2220	80
Bayou State Oil Corp	Jolly No. 7	21–22–15	1070	20
Bussa et al	Allen No. 10	23–22–15	1065	25
Urania—LaSalle Parish				
Garrett-Modisette Drilling Co	Urania No. 3	7–10–2E	1550	250
Red River Parish—Coushatta				
Gulf Refining Co	Cristopher No. 11	16–13–10	2565	10
Richland Parish—Oak Ridge				
Gulf Refining Co	Chess & Wymond et al No. 2	26–19–8E	1835	dry aband.
Ouachita Parish				
Nat. Gas Prod. Co	School Board No. 1	16–21–4E	2148	20m. ft. gas
ARKANSAS				
Nevada County				
Zing et al	McKinney No. 2	10–14–21	1243	60
Smackover				
Magnolia Pet. Co	Lagrone No. 6	36–15–17	2270	40
Simms Oil Co	Richardson No. 3	29–15–15	2640	15
Magnolia Pet. Co	B. T. Laney No. 1	8–16–16	2615	30
Nat. Gas & Fuel Corp.	Murphy E-1	9–16–15	2715	15m. ft. gas
Stewart et al	Murphy No. 6	9–16–15	2780	50
Lisbon				
Humble O. & R. Co	G. H. Goodwin No.4	20–17–16	2188	20
Lion O. & R. Co	Werner No. 8	28–17–16	2164	10

Slick well came in, and there, also, the Superior Oil Corp. got a well making something like 8000 barrels initial. These companies are now getting their second group of wells in, and, like those of Slick, they are smaller producers. Sinclair Oil & Gas Co. No. 4 Cudjo "A," in the SEc NE NW of 35-9-6, on which lease the first well made about 7000 barrels, is swabbing 120 barrels in the Wilcox sand from 4003 to 4035 feet. Superior Oil Corp. No. 2 Cudjo, in the NEc SE NW of 35-9-6, had a hole full of oil in the Wilcox sand from 3990 to 4008 feet, but did not flow. It is being tubed and will be put on gas-lift.

At least one good well was drilled in in section 35 during the week, in spite of the light wells mentioned above. This was the No. 1 Butler of J. W. McCulloch and The Philmack Co., in the NWc SE NE. This well topped the Wilcox sand at 4115 feet and swabbed 860 barrels in 24 hours. Drilled to total depth of 4142 feet and still in the sand, it is reported flowing 100 barrels an hour.

The highest single day's production recorded by Seminole was 180,886 barrels Jan. 18, with 157 wells contributing. Since, the field had dropped off somewhat, in spite of the addition of nine wells.

A Recommendation that speaks for itself!

Dear Sir:
At the request of Mr. Webb, we are pleased to advise you the address of the firm manufacturing the mercury valve used on our large gasoline tank.
Westcott & Greis, 408 Security Nat'l. Bank Bldg., Tulsa, Okla., handle this valve and communications addressed to them will be given prompt attention. After four months trial we can say that the valve has given excellent results.
If there is any other information you might desire about this valve, kindly write.
Very truly yours,
Superintendent.

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ACCUMULATION AND SAFETY

Nine Changes Suggested for Ohio Gasoline Tax Statute

CLEVELAND, Jan. 24

HUBERT B. FULLER, member of Chamberlin, Marty & Fuller, Cleveland, counsel for several large Independent oil companies, has written representative John T. Brown of the Ohio General Assembly, suggesting revisions in the Ohio gasoline tax law. Representative Brown sponsored the gasoline tax bill in the legislature two years ago.

The suggestions are intended to remove some of the hardships the present law incurs and inequalities. Nine changes are recommended.

The first two cover benzol and kerosene when blended with gasoline to form a motor fuel. These should be taxed the same as the gasoline, Mr. Fuller wrote Mr. Brown. It also is suggested that the time for filing reports be extended 15 days to the end of the month succeeding the month covering the report to the tax commission, because of the difficulty large companies have in getting branch office reports and tabulating them in the 15 days' present time allowance. It also is recommended that the time of payment of taxes be extended 15 days.

Mr. Fuller suggests that some tax official be given authority to waive penalties for violations of provisions of the law when it is shown that no wrongdoing was intended and that any mistakes might have been due to clerical errors or misunderstandings.

He also would exempt from taxation gasoline used by Ohio municipalities. The Ohio attorney general has ruled that gasoline bought by cities outside the state and shipped into the state by them and transferred to their own storage from the original containers is not taxable, but that gasoline bought from Ohio refiners is taxable. This, Mr. Fuller contends, is unfair discrimination against the Ohio refiners. The theory of the attorney general, as Mr. Fuller understands it, is that states are not expected to tax their own subdivisions unless such intention is clearly shown in the legislation.

AN amendment also is suggested to permit Ohio refiners to sell tax free gasoline to licensed dealers, with the provision that the refiner must satisfy himself that the dealer is licensed and that the Ohio refiner shall be liable for the amount of the tax on any sales to dealers not licensed. Under the present law the Ohio refiner is discriminated against because the dealers, or jobbers, pay tax on all gasoline they buy from Ohio refiners, but only on the gasoline they sell when they buy from refiners outside the state.

Mr. Fuller recommended allowing the dealers 2 per cent of the tax to insure themselves against the cost of compiling and preparing tax reports and losses on bad accounts. He says reputable companies would have no objection to making the tax a lien on the assets of licensed dealers.

Mr. Fuller has asked Mr. Brown to arrange a conference of legislators, tax officials and Ohio oil distributors.

Sinclair Again May Face Senate Inquisitors

WASHINGTON, Jan. 24.—The Supreme Court of the United States having upheld in the so-called "Mal" Daugherty case the power of the Senate to subpena a citizen and ask him questions, the government has moved to bring Harry F. Sinclair to the bar of the Senate and thereby give him an opportunity to purge himself of the contempt he showed for that body in refusing to answer questions in connection with the Teapot Dome investigation.

Sinclair may have to go back to the Senate and answer questions, although the Senate has certified him to the court for punishment for contempt and the court might find that Sinclair was justified in telling the Senate committee to "go to." That, however, is something still to be disclosed.

Safety Managers Meet in Ponca City

TULSA, Jan. 22.—A meeting of managers of safety departments of oil companies to plan their work for 1927, was held Jan. 17 in the offices of the Marland Refining Co. at Ponca City. It was decided to hold such meetings two months apart. The next one will be on March 17 at the refinery offices of the Mid-Continent Petroleum Corp., West Tulsa. The host in each instance will act as chairman of the meeting.

Seventeen safety workers attended the Ponca City meeting. Physical examinations of field men, such as are coming to be recognized as an important factor in contributing to efficiency and prevention of accidents, formed one topic of general discussion. Included in this phase of safety work is the present tendency of some companies to station employment managers in the fields. Another innovation now being practiced by the Marland Companies, is the transferring of men schooled in safety work to new fields. It has been found that example set by such men is highly effective. Those present at the Ponca City meeting were:

A. A. O'Dell and B. H. Swift, Barnsdall companies.

V. F. Palmer, Union Gas Corp., Independence, Kans.

E. N. Trout, Wentz Oil Corp.

Frank Kerr.

W. F. Coulter, Hartford Accident and Indemnity Co.

Jack Manes, Twin State-Sun Oil companies.

Ralph Bannister, Gypsy Oil Co.

J. M. Steffen, Standard Oil Co. of Kansas.

George P. Bunn, Phillips Petroleum Co.

H. C. Fowler, Bureau of Mines.

F. J. Stablein, Roxana-Comar companies.

Ray Miller, Harold Morgan, Don Cross, Earl Hearne, Marland companies.

E. D. Murphey, Mid-Continent Petroleum Corp.

Ray Miller, manager of safety for the Marland companies was chairman of the meeting and E. D. Murphey acted as secretary. The visitors were entertained at lunch in the Marland cafeteria and part of the afternoon was devoted to a tour of the refinery.

Marketers of "Red Hat" Meet in Chicago

CHICAGO, Jan. 22.—Eighty-six oil jobbers representing more than 60 companies that are participating in the collective advertising campaign of the Independent Oil Men of America, met in Chicago Jan. 19 and 20 at the special call of President L. V. Nicholas.

Mr. Nicholas says nearly a third of the members were present in person, and by letter and telegram 85 per cent had a voice in the meeting. Developments of 1926 were reviewed and some plans laid for 1927. Among other things, the ground work was laid for I.O.M.A. activities at the coming National Petroleum Marketers' Association convention in Chicago. Members of the group who remained in Chicago Jan. 21 declared it was the most successful meeting the I.O.M.A. ever had.

Plans for the Red Hat motor oil merchandising campaign were worked out. The specifications and price structure previously developed by the committee on lubrication were discussed and approved. Shipments of the first orders will go out in February, it was announced. Carload orders were placed at this meeting by jobbers in New England, Pennsylvania, Kansas, Wyoming and intermediate territory.

Each member was equipped with the names of his closest neighbors in the Red Hat campaign, and where there is any great distance between members the plan is for the two neighboring jobbers to fill in the gap. They will do this largely by seeking new members.

Mr. Nicholas announced F. J. Silsbee had resigned as assistant to the president of N.P.M.A. and news editor of Oil Business, the organization's official organ. He also has made many addresses for the national advertising campaign. The vacancy has been offered R. A. Overholser, now secretary of the Wisconsin Independent Oil Jobbers Association.

Many Methods Combine to Give Fuel Efficiency in the Modern Refinery

By J. Thoen
Marland Refining Co., Ponca City, Okla.

Read before Plant Operators' Meeting, Western Petroleum Refiners Association, Wichita Falls, Tex., Jan. 17.

THE increased interest in fuel economy among refiners and the progress made along that line within a few years are significant of a progressive attitude reflecting credit upon the industry. The rapid evolution and improvement of the manufacturing processes naturally resulted automatically in more economical operation and at the same time it has saved the refiner from the danger of too great a conservatism which would otherwise have a tendency to make him distrust innovations on general principles.

Fuel economy, generally speaking, is desired because it means dollar economy-lower costs. But there are other advantages. It will not do to forget about fuel economy because the fuel costs little. Economy is synonymous with efficiency and efficiency means no lost motion, good appearance, order, cleanliness, and convenience. Fuel economy means efficient apparatus, efficient operators, efficient supervision and efficient records.

OF primary importance is reliable knowledge of what is going on. Reading of daily quantities of fuel used throughout the plant and in each department and quantities processed are a part of every refinery routine. But to enable the executive to have at hand data enabling him to judge the value of present or proposed equipment from a fuel economy standpoint, special figures and estimates are required. At the start, these data are obtained by special tests.

Such tests are often repeated until it is found advisable to keep the instruments and test equipment in permanent operation. Recording instruments are added and considered standard equipment on future units. It is soon found necessary to keep a tester occupied in keeping these instruments in operation and repair.

A small, well organized force, responsible for the correctness, operation and maintenance of test instruments, will pay its cost many times over. Many kinds of equipment, as you know, carry a guarantee of performance. Very often it is very important to know if the performance is as guaranteed and checks on such equipment give information of the greatest value. If the efficiency of a pump or furnace installation is found very low, it may be the fault of the manufacturer or the operator, or neither; in any case the need of correction is discovered.

Generally speaking, fuel economy can be obtained in refineries as follows:

1. Increased furnace efficiency.
2. Waste heat recovery.
3. Power economy.
4. Process steam economy.
5. Process heat exchanges and continuity of operation.

UNDER the first head,—furnace efficiency, are included principles with which most of you are familiar enough and I need not go into detail. High CO_2 is the proverbial formula. You have had the wonders of CO_2 recorders expounded to you and probably used them for years. It is first necessary to find out what CO_2 can be obtained with the equipment with good operation. Some types of stills require considerable excess air for maintaining safely low furnace temperatures.

Here gas circulating systems have their application and have found wide acceptance. The principal problem involved with this apparatus is maintenance costs. Future developments will probably include increased mechanical efficiency. They are used at Ponca City on Dubbs stills and give a material increase in capacity and fuel economy.

The burner and furnace must be properly designed to give best results and it is often found the high CO_2 cannot be obtained by simply closing down on the damper. Incomplete combustion and excess air may be found at the same time, due to faulty construction. Under stills, furnaces must sometimes, with batch operation, be designed to carry widely varying rates of combustion. This means frequent damper regulation and emphasizes the value of continuous operation. Pipe stills may, during a whole run, be fired without changing the damper and still maintain a high uniform CO_2. Boiler practice has been standardized for a long time and there is little excuse for bad combustion conditions, and in most power plants, good conditions are found.

INCOMPLETE combustion or CO is rarely found except with faulty gas burners. With oil CO is generally accompanied by dense smoke, a condition that calls for immediate correction in itself.

Before leaving the topic of furnaces, a word should be said about special designs. One of these, of which there are several makes, is constructed with tunnels of ordinary or special refractories. The flame is confined within the tunnel where high temperatures obtain and a greater uniformity of heat distribution results. We have found that with such furnaces there may be CO formation without smoke, due to extreme temperatures.

We are not prepared to say that this type of construction always gives better fuel economy. They do however greatly reduce the possibility of one source of waste not heretofore touched upon, i.e., incomplete combustion of fuel oil due to low furnace temperatures. When it is necessary to maintain small fires in large furnace volumes, some of the atomized oil can pass almost undetected to the stack in the form of vapor. A high concentration of this vapor will appear as a yellow haze from the stack.

The flue gases from the furnaces, particularly at the stills, carry away a large quantity of heat. Boiler gas economizers have been used extensively in power plants where fuel costs are moderately high but their high cost often makes them a doubtful business proposition where fuel is cheaper and stack temperatures not excessive.

PRACTICALLY all Mid-Continent plants have as part of their equipment, the old type of shell stills. When these are heavily fired and run at high capacities, as is the case with our light oil stills, the flue gas temperatures may average as high as 1250°. Economizers in the batteries at Ponca City reduce the flue gas temperature to about 650 degrees and raise the crude preheat temperature 100°. It would take about 40 barrels per day additional fuel to obtain this heat transfer by means of the shell still furnaces.

Fuel circulating systems have already been mentioned. Air preheaters are now rapidly coming to the fore, but are generally expensive and should probably be considered as one of the last refinements in a plant so subject to changes as the modern refinery.

Economy in the refinery boiler plant differs from central station practice in some respects. In our case at the Marland refinery, we are equipped to handle four kinds of fuel, gas, oil, sludge and coke. The sludge from the lubricating agitators after being treated for acid recovery, has been successfully burned by mixing with coke, on travelling grate stokers. The nature of the sludge is such that while high efficiencies cannot be obtained with this particular equipment, the saving in fuel cost is almost 100 per cent of the quantity consumed, as provision for hauling and storing the

material is an expensive item. Experimenting will continue on this problem until a higher efficiency is attained, for sludge burning is no exception to the rule that the only good way is the efficient way.

A promising development along this line is a special sludge burner now being used at the Roxana refinery at Woodriver, Ill. This burner has been designed to overcome the principal difficulty in burning straight sludge, its tendency to fuse together which necessitates continuous agitation or stirring. The burner is a rotary drum into which the sludge is fed by a screw and air admitted into the revolving chamber by means of a fan. This is probably one of the latest developments in combustion apparatus for a fuel which only very lately has been given serious consideration by burner manufacturers.

The matter of burning petroleum coke is also in a stage of development which is far from complete but this problem is comparatively simple. The increased production of pressure still coke at the Marland plant made it imperative to find a fairly large means of consumption and in addition to the stoker mentioned, two unit pulverizers were installed serving two 550 H.P. boilers.

EXCEPT for a little difficulty at the start in adapting a machine designed for coal to properly handle and burn the coke, the venture has been quite successful. Due to the low amount of volatile matter in this fuel, a high furnace temperature must be maintained to insure ignition and low excess air is also essential. The boiler efficiency obtained is fully as good as with gas or oil. Furnace maintenance, however, is higher, due to erosion of the brickwork. There is also an increased amount of fouling of the tubes and depositing of fly ash or fine cinders in the boiler passes.

With stills and boilers operating efficiently, there remain great possibilities of fuel economy in the application of steam and power throughout the plant. The marked differences between the operating systems of various plants makes it difficult to prescribe detailed improvements beyond the well known essentials of good design and insulation of steam lines, etc., and I will therefore discuss a few possibilities based on a general plant arrangement such as the Marland refinery.

The boilers deliver about 300,000 pounds of steam per hour to nine distributing lines, two of these to the electric plant, one serving a battery of pressure stills, one to two other batteries, one each to the crude light oil distillation area, lubricating stills, lubricating processing departments, and wax plants. Each line is metered at the boiler house and several of the department units are metered. One great advantage in metering is the effect it has on securing the cooperation of the department foreman or superintendent in reducing wastes. The results obtained by a little care in handling steam, installation of traps, etc., and keeping the lines in good repair, are soon made evident.

Usually a good many pumps are used in every department and exhaust steam is often discharged to the air. This means a great heat loss and the logical procedure is the installation of a complete exhaust system for collecting this heat and utilizing it for heating purposes, tank coils, building heating, feedwater heating, oil preheating and agitation in stills are some of the applications. By the time this steam is condensed, both the energy and the heat have been utilized. By providing a large demand for low pressure steam, a low power cost can be maintained and where electric current is produced the type of turbine to be used is of the greatest importance.

CONDENSING turbines with low water rates are necessarily economical if back pressure turbines can resell their steam to some other departments. As an example if a certain process requires for heating 75 pounds of high pressure steam and a condensing turbine is used which requires about 20 pounds of steam to produce a killowatt hour, the heat from 80 pounds of exhaust steam as it gets from the high pressure 75 pounds and the turbine if operated non-condensing, may use 85 pounds to produce a KWH but will send back at least 80 pounds of exhaust. Thus, instead of a total of 75 + 20 or 95 pounds total steam expended, there will be only 85 pounds or a saving of half the steam used for power. Exhaust systems are operated at from 5 to 20 pounds pressure, depending on heating requirements, line capacities, etc. Sometimes higher pressures are required. In our case a large amount of process steam could be used at 40 pounds pressure and two extraction or bleeder turbines were installed equipped with surface condensers to allow full load operations regardless of the amount bled.

This is a decided advantage over the straight back pressure type as the latter carries a load in proportion to the amount of steam delivered and thus is not adapted to automatic regulation. With the bleeder type, an automatic valve admits steam to the system from the space between the first and second stages, according to the demand, and the full generating load is maintained by more steam being automatically admitted to the condensing stages.

THE 40-pound steam is used for agitation on all lubricating stills requiring the largest quantities of steam, particularly the bright stock stills. It is also used for heating weak acid preparatory to going to the concentrators, and by means of a reducing valve, it maintains a constant pressure in the exhaust system. When bleeding 35,000 pounds per hour in this manner, the water rate chargeable to the turbines is reduced from 19 to about 15 pounds or 21 per cent.

Such improvements lose their effect at once if exhaust steam is allowed to escape from pumps, engines or relief valves, hence the importance of a demand in excess of the normal supply and a balancing of the difference by feeding in with a regulating valve. This balancing quantity should, however, be kept as low as possible as a reducing valve dissipates the available energy in the steam.

The system now being completed, at Ponca City, of which the above are a part, also includes the substitution of exhaust for high pressure steam for agitation in all the crude stills and some of the lube stills. This will reduce the available exhaust steam supply and increase the demand which will again be reduced by preheating the boiler feed water before it reaches the treating plant. This preheat will be accomplished by absorbing the steam vented from the lube still condenser boxes. An open heater for this service will operate at a slight vacuum, using water from the overflow of the condenser boxes. The water will thus be preheated to some extent before reaching the steam. It is expected that an average of about 80 B.t.u.'s per pound of feed water will be recovered, which would mean a reduced steam demand at the final heater of about 14,000 pounds per hour.

WHERE a plant covers considerable ground, steam transmission lines from a central boiler house are often so long that there is serious loss both in pressure and superheat. The advantages and disadvantages of separate boiler houses checked against this condition will sometimes throw the balance for and sometimes against decentralizing. In the case of our pressure still extensions, we had the problem of transporting steam to run the turbine driven centrifugal hot oil pumps for the Dubbs stills and the calculated pressure drop through nearly 2000 feet of line presented a serious difficulty. We therefore installed a barometric condenser serving this unit, thereby reducing the steam consumption approximately one-half. In this way of handling the problem there is, of course, a loss of the latent heat but to offset this we have avoided the necessity of a much greater investment in an additional boiler plant.

To get the most service out of steam it is necessary to carry on a continuous campaign for checking losses and analyzing power and heating consumption. Some of the common steam wastes are: leaks, poor insulation, lines left under pressure after service from them has been discontinued, oversized lines, undersized lines, etc. Very often steam is used for such purposes as what is called atomizing gas in gas burners. Atomizing gas seems to me a procedure similar to spiking alcohol. Steam jets for ventilation are often inefficient and left in use after they are no longer required.

Perhaps the greatest and most interesting development in heat saving is the increased use of heat exchangers of all sorts used on stills. Pipestills designed for continuous operation, now used everywhere, illustrate the value of continuous apparatus. Better control, higher capacities, lower fuel consump-

tion are the outstanding features. When a finished product in any manufacturing process contains no more heat units than the raw, it is only necessary to develop the design towards an ideal point where the heat is made to travel in a cycle and requires no makeup.

IN practice, it is of course impossible to reach such a point but the possibilities are not exhausted until the makeup introduced in the furnace is equivalent to the radiation losses plus a reasonable amount of heat carried away by cooling water, etc., at temperatures too low for practical heat exchanger application. Low temperatures and large quantities sum up to huge B. t. u. totals which are hard to recover. One of the ways possible is the method described above relative to feed water preheating but the water used thus can only represent a small percentage of total. This leads to the consideration of less water expenditure leaving only one possibility—more exchangers.

The equipment on a new pipestill at Ponca City combines some of the latest developments along this line. The crude enters through a series of exchangers cooling and condensing in turn all the cuts from the higher to the lower gravities. Before entering the pipestills, it passes through the residuum coolers and is raised to a high enough temperature to be discharged into a flash tower and the vapors from this tower go through the first exchanger. All this heat exchange reduces the furnace demand and the fuel consumption as compared with the old type stills with economizers, is approximately one-half per barrel crude charged. In addition to direct fuel saving, the heat absorbed in the exchangers reduces cooling water requirements in proportion.

In other departments heat exchangers are used on vapor lines and still pumpout lines, preheating still charges for continuous and batch operation both. As such apparatus is fairly dependable in results, easy to operate, save time and increase capacities, they should be applied wherever there is an opportunity. They are as a rule suitable for use with any ordinary medium and do not necessarily represent a permanent investment against any department where changed conditions make them inapplicable.

Steam heat exchangers require more attention than do vapor or oil exchangers. For higher temperatures, high pressure steam must be used and properly trapped and the condensate properly disposed of.

THE matter of condensate returns to the boilers merits close attention. While the direct heat and fuel saving does not amount to a large item, when combined with other desirable advantages in using condensate, it more than justifies the expense of whatever equipment it needed. An underground system for collecting condensate from traps of all kinds requires little attention after it is installed. It should gravitate to a central basin from which the water may be pumped back to the feed water heater. The re-evaporation from the water discharged from a trap at higher than atmospheric pressure is usually condensed again before reaching the hotwell and helps maintain the temperature at very near 200°. If the pump discharge line to the heater is well insulated, further loss should be quite low and little steam is required to bring the water to the final feed water temperatures. In our case the temperature of the condensate is about 90 degrees higher than our ordinary raw water supply and by returning only an average of 12½ per cent of the steam delivered to a group of departments, we save by this means the equivalent of a million pounds of steam per month, worth approximately $250.

The lubricating departments use a considerable amount of water in processing and require it free from impurities. This reduces the amount available for returns but by making the best possible arrangements, a return of around 40 or 50 per cent of the total steam can be obtained in many plants. Besides the fuel saving there is the saving in chemicals for water treating, the amount per 1000 gallons depending on the hardness of the raw water. Soda ash and lime treatment with fairly hard water costs 7 to 8 cents per 1000 gallons on this basis the value of the above returns would be $120 per month.

Lower boiler water concentrations with consequent reduction in blow down and ability to operate boilers at higher ratings are also among the advantages.

There remain to be mentioned a few specialties which we have been using for some time with good success. Automatic control of heating processes have many applications. One of these is control of wax sweating. Hand control has always been difficult and automatic controllers have speeded up the process and reduced the steam consumption. Controllers for pressure, tower temperatures, flow etc., are also used and have some indirect influence on fuel consumption, but are of value mostly as a help to the operator in producing a uniform product.

BOILERS with priming tendencies are equipped with steam separators or purifiers in the drum which prevent the carrying over of boiler water into the superheaters and steam lines.

The subjects covered deal mostly with equipment and design of apparatus and their possibilities. Actual results depend on the attention given such apparatus and the interest taken therein by the management and the operators. It cannot be denied that much valuable machinery is bought and paid for and never given an opportunity to serve its purpose to the fullest extent.

Records and regular reports must be so devised as to give immediate indication of faulty operation so that steps can be taken to correct the trouble. Constant study of all heat operations will lead to the discovery of many opportunities for improvement, in fuel economy as well as in processing and while the final tendency will necessarily conform to the particular characteristics of the plant, the net results are a direct gain not only to that plant but to the industry as a whole.

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Recovery System for Evaporation Losses

By B. C. Frichot
Chief Chemist, Shaffer Oil & Refining Co., Cushing. Okla.

Delivered before Plant Operators' Meeting, Western Petroleum Refiners Association, Wichita Falls, Tex., Jan 17

IT is needless to say or explain that even in the most efficient refineries there are still a few losses, varying in degree to the efficiency of the processing of the crude oil. The object of this paper, which is non-technical, is to bring before you two systems that are at present used to assist in eliminating some of the losses, i.e.—losses from light oil storage tanks, rundown tanks, pressure benzine receivers and the uncondensed vapors from receiving houses. The uncondensed vapors from the distillation of crude oil has been gradually increasing in recent years due to the efficient handling of the crude oil in the fields. The two systems to be described are identical in many respects but still sufficiently different to warrant a description of each. Please bear in mind that the figures and yields are for the cooler months of the year.

Plant Number 1:—

The recovery unit at this plant consists:—

(1) Various gathering systems
  (a) Light oil storage and blending tanks
  (b) Rundown tanks
  (c) Casinghead tanks
  (d) Pressure benzine receivers
  (e) Receiving houses
(2) Compressor unit
(3) Absorption unit, pumps and tanks

All the large light oil storage tanks and blending tanks are connected into one gathering system. The size of the equipment at each particular tank being dependent on the probable amount of vapors that will be required to handle. Each tank is equipped at the apex of the cone shaped roof with a flame arrestor, which is a safety device. The interior of the flame arrestor contains a filler, the simplest way to describe it is to imagine a piece of pasteboard, packingboard from one side of which has been peeled the thin cardboard and then rolled up. On top of the flame arrestor is placed the vacuum pressure relief valve which controls the state of the interior of the tank. These valves are quite sensitive so as to eliminate chances of disastrous consequences to the tanks. A separate line goes from each tank to its regulator thence to the main line to the compressor.

The rundown tanks are equipped similar to the storage tanks excepting the equipment is smaller. In this system are included the rundown tanks from the various crude batteries, pipe stills, re-run stills and pressure benzine stills.

The casinghead gasoline tanks are on a separate gathering system they not being under sufficient pressure to force their vapors into the absorption unit, requires their passage to the compressor.

THE pressure benzine receivers attached directly to the cracking unit are held under sufficient pressure so that the vapors from these tanks will force themselves directly into the absorption unit without the necessity of going through the compressor.

The look boxes in each receiving house are manifolded together, the line being brought outside of the building to the safety device and regulating valves, thence to the main line to the compressor.

Each separate gathering system has its own drip to eliminate water, condensed vapors and foreign matter before it enters the main 12-inch line to the compressor. The main 12-inch line also has its own drip to further eliminate undesirable substances entering the compressor.

Having gotten all the various units of the plant hooked up and cleaned up we are now ready to begin the actual recovery of the gasoline.

The mechanical part of the plant consists of:—

(1) One steam driven twin cylinder 10 x 16 x 20 x 10 compressor.
(2) One finished oil pump.
(3) One recirculating oil pump.
(4) One raw naphtha pump.
(5) One relay pump.
(6) Three absorbing towers (1 - 4′ x 15′) (2 - 4′ x 20′) equipped with constant level regulators.
(7) Two pressure rundown tanks.
(8) Gas regulators to keep system under constant conditions.

THE compressor which is run at 100 R.P.M. pulls a 10-point vacuum on all the gathering lines. If the vacuum is allowed to fall below 8 points you are not able to draw in the vapors. The gas is compressed to 15 pounds pressure leaving the compressor through a 12-inch line to which are added those gases which are under sufficient pressure to enter of their own accord, entering Number 1 tower at the bottom. The function of the tower is to cool and wash the gases. The water used serves a double purpose. What gasoline condenses in this tower is trapped off. This tower is equipped with a constant level regulator. The cooled gases leave Number 1 tower at top through a 10-inch line entering Number 2 tower at the bottom. This tower which is the smallest of the three is equipped with five trays of bubble caps. Over the top of this tower is pumped the enriched naphtha from Number 3 tower. The naphtha after passing this tower is ready to be turned over to the refinery proper for its further processing. The gas after passing through Number 2 tower is put into the bottom of Number 3 tower through a 10-inch line. This tower is equipped with 10 trays of bubble caps. Cool raw naphtha is pumped over the top of this tower. In each case the counter current principle is used. Raw naphtha counter current to lean gas and enriched naphtha counter current to rich gas. The raw naphtha before being pumped over Number 3 tower is cooled in a double pipe exchanger then through Number 3 tower to its tank, picked up from the tank pumped through a second double pipe exchanger over Number 2 tower to the finished tank.

THE lean gas after passing Number 3 tower can be recirculated through the system a second time if found necessary, which is not the case under normal operating conditions or it is put through a back pressure regulator operating at 15 pounds on the high side and two pounds on the low side into the fuel system to be burnt under the stills and boilers.

Regarding the results of this system, I will say we have no available data regarding the actual amount of gas handled. It could be calculated from compressor displacement. The normal gasoline content of gas excluding gas from high pressure systems was found to be from 1 to 1½ gallons per thousand cubic feet. The lean gas leaving Number 3 tower to the fuel system averages 2/10 gallon per 1000 cubic feet.

The raw naphtha used as an absorbing medium ranges from 47 to 52°B with an initial of not less than 250° F. and an end point that can be blended off with motor gasoline. The end point of the naphtha after passing the system shows a decrease in end point of approximately 8° F.

The volume of naphtha used in this system varies from 600 to 800 barrels per day. The volume is unimportant other than to have plenty. The minimum yield of this plant has been as low as 25 barrels per day, this being due to parts of the refinery equipment not being in operation. The maximum yield has been as high as 114 barrels per day. The daily average for December, 1926, was 72 barrels of gasoline.

A few of the essential points to watch in the operation of this plant is to keep the drips cleaned out, the constant level regulators from sticking the gas regulators from sticking and corroding up and the compressor clean. The compressor requires a clean out about once every three weeks causing a shut down of approximately 8 hours.

Plant Number 2:—

The system used in this plant is in general quite similar to the one already

described but it varies in a few details.

The storage tanks are equipped with the usual pressure-vacuum valves from which a breather line, varying in size from a four-inch for a 10,000 barrel tank to an eight-inch for a 55,000 barrel tank, leads to the ground to a flash back screen located outside of the tank dike at an elevation of four feet from the ground. The interior of this safety device contains a double monel metal screen of 40 mesh. The original screens of copper soon corroded up and failed to function. From each of the tanks a separate line leads to a 10-inch volume header thence through a regulator, the high side operates at one to two ounce and the low side 10 to 15 points vacuum, to a 12 x 12 duplex compressor. In this arrangement the entire system is in a condition of equilibrium.

ANOTHER system identical with the one described gathers the gases from the look boxes of the various batteries of stills and rundown tanks thence through a regulator to its compressor. In cases where you have floating roof rundown tanks the gas is taken off of a trap placed in the rundown lines.

The casinghead tanks in this instance are carried under sufficient pressure to deliver their vapors through a separate three-inch line to the compressor direct.

The pressure benzine tanks have their own gathering system and it is so manifolded that this gas can be delivered to the compressor working under the lightest load.

Gathering lines run to the loading rack to gather these vapors. This system is not completed as yet.

The vapors coming from the storage gathering systems show quite a wide variation in air content but a fair average over a month would probably be between 45 to 55 per cent. The air content of the vapors from the look boxes and rundown tanks vary from 8 to 15 per cent.

The gases entering the compressor show a content of 17 gallons per 1000 cubic feet.

The gases before entering the absorbing unit shows a gasoline content of from ¾ to 1½ gallons per 1000 cubic feet.

A large number of checks on the gas going to the fuel system shows the content to be .075 gallons per 1000 cubic feet. The rich oil going to the steam still shows four to six per cent absorption while the stripped oil shows nothing to ½ per cent.

One plant visited showed for a 31 day month during the colder portion of the year, a yield of 3100 barrels of high gravity gasoline and 3,102,277 cubic feet of gas put into the fuel system after due allowance was made for air content.

In closing, I wish to leave a small problem for you to ponder over. Assuming the complete plant to cost $50,000 to install, how long will it take to pay for itself returning 100 barrels of high gravity gasoline and 100,000 cubic feet of gas per day?

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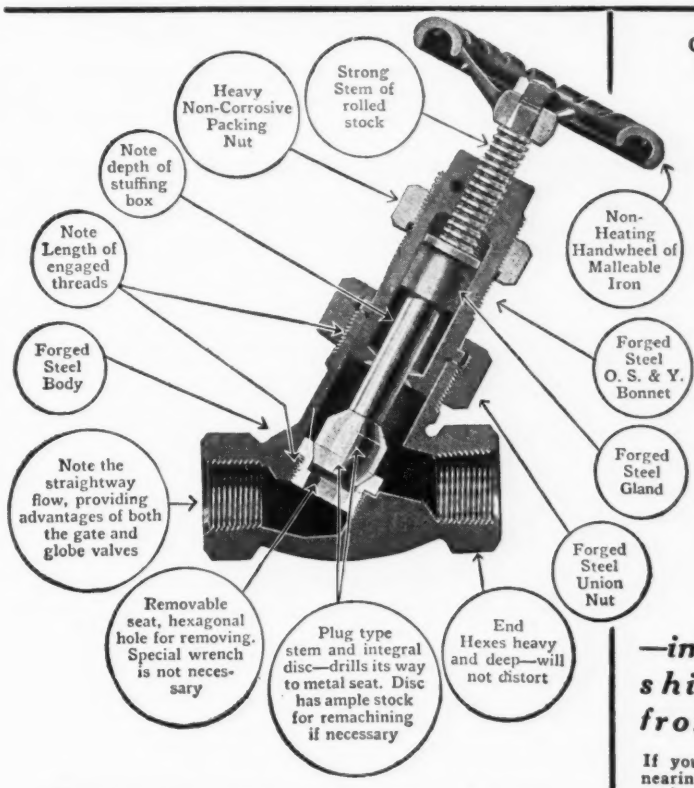
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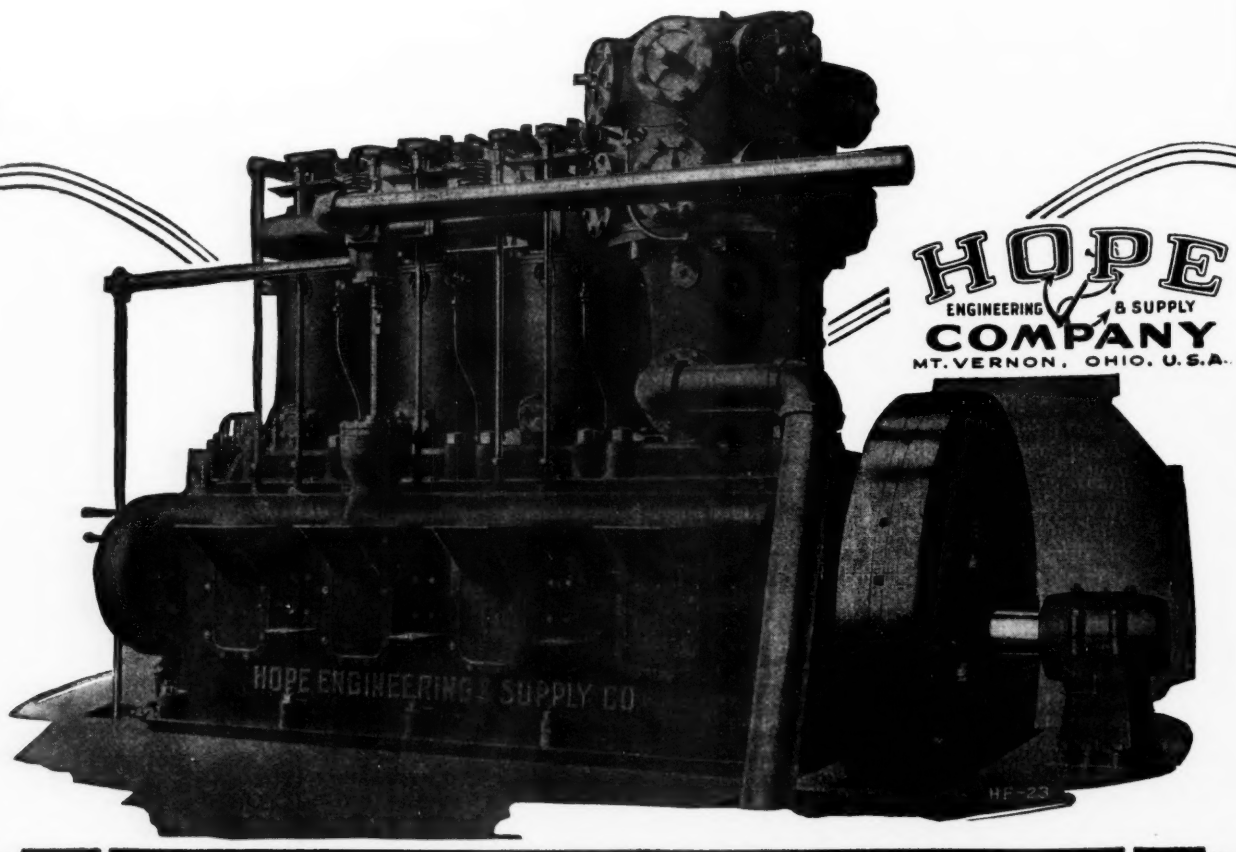

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ENGINEERS & CONTRACTORS IN NATURAL GAS AND OIL

Making Sure Derrick is Plumb Avoids Later Grief in Drilling

By Lawrence E. Smith
N. P. N. Staff Writer

TULSA, Jan. 22

SEVERAL things can happen when a derrick is not properly erected. The usual first trouble is that the derrick is soon out of plumb and that leads frequently to a crooked hole. This, in turn, may mean the loss of a hole involving a good many thousand dollars. If, by good luck, the crew is able to go on and complete the well, even though it is crooked, there may be no immediate grief when the well is flowing its production, but grief will likely come when the well reaches the pumping stage, for rods and tubing may wear excessively.

An engineer who recently made a careful check of the Seminole pool methods, with particular reference to erection of steel derricks, has supplied the writer with some information on his findings. His study was made carefully and other engineers familiar with the same problem say he has stated the case fairly.

He bore in mind all the way the excessive speed called for in erecting derricks for this development, but he believes that certain basic methods could be followed even under similar rush conditions. In that way time and money would be saved for the operator, there would be less grief for the manufacturer and the rig builder would safeguard his reputation.

The usual practice in the Seminole field was for the operator to buy the derrick, which in Seminole was customarily a combination type, 122 feet high, f.o.b. warehouse yards, the operator hauling the material to the location and employing regular rig builders to erect it. As a variation on this practice, at least one manufacturer is putting a number of his derricks into California and in the Panhandle field of Texas, erecting them with his own crews of structural steel workers.

Corners of concrete not less than 6 feet square and generally larger than that up to 8 by 8 feet and 6 by 9 feet were run for the Seminole pool derricks. The general practice was followed of mixing the concrete in boxes on the derrick floor, which had been built and supported by wooden piers before the concrete piers were poured.

THE concrete aggregates were mixed dry in a long box built at the edge of the derrick floor. The material was then flushed into the form with water. Proportions of the aggregates were not uniform and were seldom measured accurately or the same for any two corners. The only really uniform practice was to use lots of cement.

THE accompanying article is based on interviews by Lawrence E. Smith, staff writer, with rig building contractors and engineers in the Seminole field, where the demand for haste in the early development of the field led to some bad derrick jobs.

The fault being due to careless and hurried erection, basic methods have been suggested by those familiar with conditions there, which could be followed even under demands for haste from oil operators, and much of the trouble encountered at Seminole avoided in the future, in their belief.

This method has been criticized as unnecessarily expensive; for, by flushing the dry aggregates into the form, excess water is used and the water will wash out of the crude boxes used for forms and a considerable proportion of the cement is washed out. The suggestion is made that the piers be poured as far ahead of derrick erection as possible by men skilled in concrete work, using, perhaps, some quick-setting compound in the place of the excess cement.

MANY of the corners were not given time to dry, for it was fairly common to finish the corners one day and start derrick erection the next. The result was a majority of the derricks settled on the corner last poured and had to be jacked up from a quarter to three-quarters of an inch. Under the base plate on the low corner, a "shim" was placed and anything that was handy was used for this purpose. Old plates from rotary bits, pieces of sheet metal and even wood were the "shims" used.

Here is a derrick costing $2000 to $3000 with $500 or more expense of erecting. It bears the responsibility for the success of an enterprise whose cost is from $50,000 upward, to say nothing of the cost of lost production if the well fails to be completed. It should be safeguarded in every possible way. Yet, under a corner that may have to support 55 to 60 tons, is a bit of plank less than an inch thick.

Derricks of this size have been known to be set on concrete piers not much more than a foot thick. The American Petroleum Institute standardization committee on steel derricks specifies one-inch bolts shall be set 30 inches in the pier.

In some cases derricks have settled so quickly the rig builder was still on the job and jacked up the corner and put additional concrete under it.

Assuming that the derrick, however, is in plumb and every possible precaution taken, there is still room for trouble. Cases are known where not enough consideration was given to the relative positions of the cellar and corners. The crew, in placing the rotary turntable on the derrick floor, centered it above the center of the cellar. If the cellar was "off," some allowance was made for the variation, but not by accurate measurements.

OTHER methods of centering the turntable are:

Measuring the side of the derrick between legs with a piece of board, finding the center between legs, going to the adjacent side and making the same measurements there, then projecting these lines across the derrick floor and marking the point where they cross as center for the rotary turntable.

Using the position of the drawworks and the drawworks braces for guides. Errors may be caused this way, for most drawworks have been framed for use in 22-foot base derricks and many of the derricks in use with the deep drilling are 24-foot base.

These factors contribute to starting the hole off center with respect to the center of the derrick top.

It is suggested that the center of the derrick be established before any other work of rigging up is done. The reverse is general practice; that is, equipment is put up, then it is established where the center of the turntable should come and it is put there if it is not more than a foot out of line. If more than a foot, some part of the drawworks or turntable is moved around to bring the table approximately under the center of the derrick top, then the crown blocks are shifted to make the traveling block swing close enough over the hole to permit making up the drill pipe.

A SUGGESTED method of locating true center that, in theory, is an exact one. This is to stretch two wires across the top of the derrick diagonally between legs and where these wires cross will be the true center of the area, whether perfectly square or a little out of true. From this point a plumb line may be dropped to the derrick floor and near the floor, three feet or so up on the derrick, two more wires run diagonally

across the derrick will establish the center of the base. If the plumb bob comes over this center point, the derrick is set true and square; if not, the derrick is someway out of line.

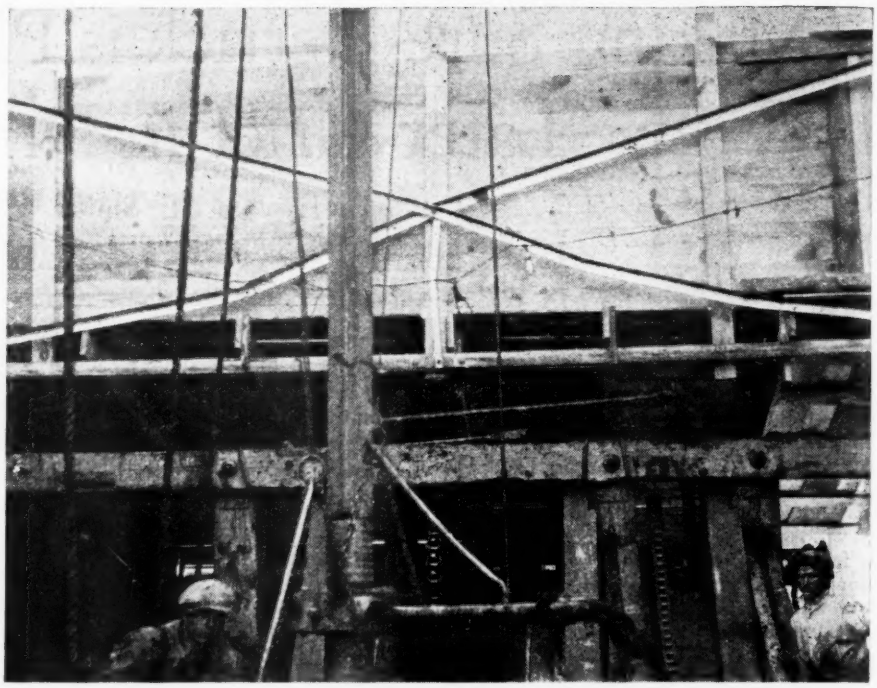
A CRITICISM of this method is that, with a very high derrick, it would be difficult to get such a plumb bob as is ordinarily used to fall true if there is much wind. The weight would have to be great and the line heavy to get absolutely a vertical fall.

It is suggested by engineers that a closer check be kept upon derrick erection and rigging up so that proper allocation of responsibility may be made. If the rig building crew who dig the cellar, pour the corners and erect the derrick do not do their work approximately right, the drilling crew that follows inherits the grief. The drilling crew should see that the turntable is located over the center and put on a foundation that will make it level. The balance of the rotary equipment should then be fitted to the turntable, although this may cost a little more money to make necessary changes. These changes, however are not great being mostly in the headboard, posts and braces.

Obviously, the first thing that will happen, if the derrick and equipment are not trued up, is the drilling of a crooked hole. It is generally admitted that no rotary hole is drilled absolutely vertical, but precautions taken at the start may keep it from going so far off as to cause trouble.

Here is the result of observations on one well in the Mid-Continent:

There were 150 feet of surface pipe set in the hole, which had been drilled out of vertical toward the north. When the crew changed to rock bit, the hole drifted toward the south. Farther down another change in direction was evident, for the pipe stuck so fast that about an hour was required to move two stands, about 180 feet, past this new point of change in direction, although the driller was using every bit of power that a 10 by 10 double cylinder engine with about 175 pounds steam pressure could supply, this power being transmitted through the low set of sprockets on the drawworks to the drum and the line strung with four moving parts, or as a five-part line in the derrick.



Here the driller had trouble in putting the drawworks in place so he hooked on with blocks to the braces above the drawworks position. The braces were bent down, necessitating their replacement

AS the drill pipe was pulled out it rubbed on the slips in the turntable on the side next to the drawworks because of the way the hole was started. It was attempted to remedy this by lining up the derrick. This could not be done, for with the 2-inch shims that were placed under the corner to line up, the derrick leaned so much out of vertical that, while the pipe did not rub the slips, the traveling block was pushed over into the fourble board and the derrick had to be set back in plumb again.

A check of the trouble showed that the turntable was off center toward the drawworks about 9 inches and toward the forge side of the derrick about 6 inches. The crown block was off center 3 inches to make the Kelly line up near enough over the hole to permit the crew to make up drill pipe.

While the hole probably was completed with this set-up, by taking lots of time, thus offsetting the speed made at the start, the following are results that could be looked for in any well drilled with so many deviations:

The hole might be finished so far off the vertical as to get the pay near the next well, failing to drain the territory it should.

After the flush period of production was past, swabbing might be resorted to and the load materially increased by the swab passing around the bends in the casing. Agitating with tools or bailing would encounter like frictional trouble.

THE worst grief, however, would come with tubing the well and pumping with rods. The tubing would have to be 2-inch, for it was not believed that larger size could be run inside the 6⅝-inch with which the well was to be finished. When the well was put on the pump, the rubbing of the rods would wear through the tubing and cause much pulling to replace the worn joints, thus running up the expense of production. Rods would also be worn.

Witness a case illustrating the danger of trying to make great speed: In one Oklahoma field five wells were drilled on a lease under rush orders. Hasty erection of derricks and speed in rigging up caused all to be drilled so crookedly that they had to be cased with 5-3/16-inch, although planned to be finished with 6⅝-inch. All are giving constant trouble with worn rods and tubing. The sixth well on the lease, drilled after the rush was over, was given more time from the start and it is pumped without trouble.

A point made by engineers is that greater attention should be paid to der-

(Continued on page 64)

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The Editors' Viewpoint

National Petroleum News

Cleaning Its Own House

THE Vacuum Oil Co., owning one of the few national brands of motor oil, has at last begun to clean its own house. Beginning some time this year, it removed signs from all dealers that were caught substituting other oils for its brand or in other ways conducting an undesirable oil business.

This is the frank statement made by Frank W. Lovejoy, sales expert with the Vacuum Oil Co. at the fall meeting of the American Oil Men's Association at Chicago. Mr. Lovejoy said that so far this year Vacuum signs had been removed from the places of business of more than 2000 dealers.

It has been the contention of National Petroleum News from the start of its agitation against the outcry on substitution, that the national brand motor oil companies were not straightening their own sales methods and that they should do that before they undertook any campaign of publicity to the general public about alleged substitution.

Dealers have been procured by national brand oil companies, for the most part, by vigorous sales methods. Obviously, such sales methods, no matter how carefully regulated from headquarters, will bring in many undesirable dealers. It is obvious, in view of the extent to which automobiles are used in crime, bootlegging and so forth, that there must be a large number of undesirable prospects to retail oil.

Until comparatively recently, it seems to have been the policy of national motor oil companies to place their oils and their signs with every dealer who would take them regardless of the character of business the dealer was conducting.

The burden of selling their oil is on the six or eight or so companies who are trying to market it nationally and not on the other 6000 or 8000 oil companies who are selling their own oils and so far seem to have no complaint to make about substitution. And it is up to these few companies to so market their oil that any effort of theirs to protect the oil, the trademark and so on, should not reflect upon the rest of the oil industry, yet the joint policy of these companies so far, seems to be to the contrary.

Much harm has been done, we believe, to the reputation of the oil industry and no good has been accomplished in eliminating what little substitution there may be of these few brands by the methods so far pursued by these national-brand companies.

Therefore, the changed policy of the Vacuum Oil Co. should be heartily welcomed by the whole industry. It is a sane, common-sense, business policy—one that should have been undertaken in the first place. No matter how much this policy may cost the Vacuum Oil Co. in dealers, the policy should be carried out, because it is up to the Vacuum Oil Co. first to find reputable people through whom to deal with its ultimate customers, the consumers. Neither the Vacuum nor anyone else is justified in being a party to any campaign to try to reform a lot of dealers which campaign at the same time reflects on the standing of the rest of the oil industry.

When these half dozen or so national brand oil companies that have been making the loudest complaint about substitution, have done all that possibly can be done toward weeding out disreputable dealers and they still find that a large percentage of what might be termed "reputable dealers," although they wouldn't be reputable in a true sense of the word, are substituting, then it will be time enough for those companies to present the matter directly to the American Petroleum Institute and see whether or not some cooperation among the oil companies might not be brought about to eliminate the evil, *if the evil is sufficient to warrant the effort.*

National Petroleum News is not yet convinced that, with the analysis of the evidence upon which the outcry about substitution has been based and a proper checking of it, enough substitution would be disclosed to warrant any agitation by the oil industry; nor is it convinced that such disclosure would warrant any fear by the public that it is not getting the oil it is asking for.—W.C.P.

Tonic Boys Active Again

OUR old friends, the gasoline tonic boys, are busy again. Marketers report that the tonic gentlemen are coming in by the scores with pills and bottles of red, white and blue liquid and everything else.

But not a single tonic boy has a report from a single reputable engineer or chemist to support his claims. Every one of them wants the oil jobber to try the dope "and just see for himself how well it works."

As we've said many times in the past when the tonic boys were busy, if a tonic manufacturer so-called does not produce a detailed report from a reputable firm of engineers in support of that product, it's fair for the marketer to assume that he can't produce such a report because the product isn't any good. The tonic boy who doesn't submit a report shouldn't be given a minute of a jobber's time. The first question that a jobber should ask a tonic boy is, "Let's see your engineering report," and if he hasn't one, show him out of the office, or throw him out.—W. C. P.

Too Much Loose Credit

TOO much loose credit is being given in the oil business these days. Marketing companies are too lax in their credit with garages and other dealers and all are too careless with automobile owners who are customers at service stations.

Many men don't seem to appreciate that at one time the Standard Oil Co. had the oil business on practically a cash basis; that in the first years of gasoline its sales to automobile owners were for cash. The Standard companies have held to that policy probably longer than their competitors, but a too extensive a use of credit has forced these companies one at a time to change their policy.

There is no reason in the world why, so far as the individual automobile owner is concerned, he should not today be on a cash basis. The man who hasn't got the $2 or $3 in his pocket to pay for his gasoline is not the man to do business with anyway, but there isn't any automobile owner today who hasn't got the dollars in his pocket to pay cash for his gasoline. All the oil industry has to do is to ask for it. There is no convenience to the private car owner in a charge account. He may think there is, but there is not. It takes more work and bother to have a service station at-

HAS HE DISCOVERED HER SECRET?

tendant make out a ticket, get the signature of the owner and then for the owner to check up those tickets at the end of the month against the bill and send a check, than it does to pay cash on the spot.

It is a great relief to read in our issue of Jan. 12, page 75, how the Hickok Producing Co. at Toledo, Ohio, which is running a big marketing business, is working as close as possible to a straight cash basis. They have built up 220 service stations in northern Ohio and Michigan through this policy. If they can do it in a territory that has been badly shot with credit, there is no reason why everyone can't do it.—W. C. P.

Pollution of Crankcase Oil

THE oil industry might well adopt a phrase used by L. V. Surtees, refinery man, now with Mid-Continent Petroleum Corp. at Chicago in a talk at the Four State jobbers' meeting in Kansas City a few weeks ago.

"There are two factors in connection with the deterioration of a motor oil in service," Mr. Surtees said. "One is not generally spoken about. There is a 'dilution' of oil and a "pollution' of oil. People don't realize how much oil is polluted and how much pollution is responsible for the so-called carbon deposit, the black color, etc."

An apt phrase is of immense educational value. It would be well if the oil industry could take up this expression "oil pollution" and use it. The industry has advertised dilution until the average motorist seems to think that is the sum and substance of what happens to oil in the crank case.

If we talk about pollution we can bring home to the car owner the fact that he is bound to have considerable accumulation of dirt in his oil until his crankcase is either air tight or until all air entering it is filtered. It has long been the opinion of many oil men that most of the so-called carbon deposit in cars is not carbon at all, but dirt.—W.C.P.

Congressional Absurdity Again

THE absurd extent to which the regulating idea can go is illustrated by the proposal of Senator Capper of Kansas and Representative Kelley of Pittsburgh to introduce a bill in Congress to provide for a Federal Baseball Commission which would regulate the professional baseball business of the country. This bill is prompted by the disclosure of scandal recently by Judge Landis.

Baseball may need some cleaning up, but it is somewhat obvious to the casual observer that the baseball people themselves seem to be doing a fair job. About all the government could do would be to rewash some of the dirty linen. A government commission would be just as liable to have as much, possibly even more, dirty work pulled off under its control of baseball, as would private interests.

Maybe it is not fair to these two alleged statesmen to judge their bill without seeing a copy of it, but on first thought, the idea of government control and operation of baseball is about as ridiculous an idea as has yet been proposed to Congress, and that is saying a great deal.

Because some subscription solicitors for farm papers "gyp" the poor farmers, because some of their advertising men may get a little bit strong in their sales work, would Senator Capper, who is a farm paper publisher, recommend that the government take over and control farm papers? Would Mr. Kelley be for the same idea as applied to his business, whatever it might be? If so, then it is possible that it might be in point for these two gentlemen to suggest regulating somebody else's business.

Possibly the oil industry may feel a little bit relieved that the bill is not aimed at it. It will be interesting to sit on the sidelines and to watch somebody else regulated for a while.—W. C. P.

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(Continued from page 60)

rick sizes, as well as to their erection. With the increasing depths of wells and the increasing sizes of drilling equipment, mistakes may be made in using derricks that are designed for normal equipment. The proportion should be preserved with respect to design of derricks to handle the load and more attention should be paid to the recommendations of manufacturers.

While there is little left of the early prejudice against steel derricks, stories are still heard in the field that they will bend over under heavy loads. Some of these stories, at least, can be explained under the head of optical illusion.

REPORTS are made that the derricks will bend over, say, toward the drawworks while a string of drill pipe is being pulled and bend back as the pipe is lowered into the hole. The man in the derrick on the fourble board will check with the driller in this observation and both will agree in reporting to the contractor that the derrick is unsafe. Reports are sometimes made that the movement of the derrick was as great as 3 or 4 inches out of plumb on a 122-foot derrick.

There is a simple explanation for at least part of these reports. The derrick man and the driller are at opposite ends of the stand of pipe and the end of the pipe is traveling away from the driller and toward the derrick man. Checks of such reports have shown in many instances that the pipe rubs on the slips in the turntable, showing that it was not coming out of the hole straight and the deflection was away from the driller and toward the derrick man. A simple illustration may be used. A passenger on a train standing still has the impression that his train is moving if one on the next track moves. In the same way, the driller thinks he sees the derrick moving toward him as the pipe travels away from him; the derrick man gets the same impression, only reversed, but both agree that the derrick is moving.

In such instances a person stationed outside the derrick fails to note any movement of the derrick and it is suggested that such reported bending of the derrick be checked by someone not on the derrick floor or in the derrick.

Ohio Jobber Elects Officers

SPRINGFIELD, O.—At the annual election of officers of the United Oil Products Co. on Jan. 11 here, Josiah Turner was re-elected president, treasurer and general manager for the current year. Owen Snyder was elected secretary and Charles E. Ridenour vice president. Directors elected are: John C. Hover, H. P. Clouse, Albert Horn, and Mark M. Livingston.

SPENCER, O.—The Four Square Petroleum Club was organized on Jan. 10 at Wooster, O., with 25 oil jobbers attending from six counties, according to C. R. Aldrich, manager of the Spencer Oil & Gas Co. here.

Wrinkles Unite Utility for Jobber And Convenience for Public

By Roger B. Stafford
N. P. N. Staff Writer

DAYTON, O., Jan. 21

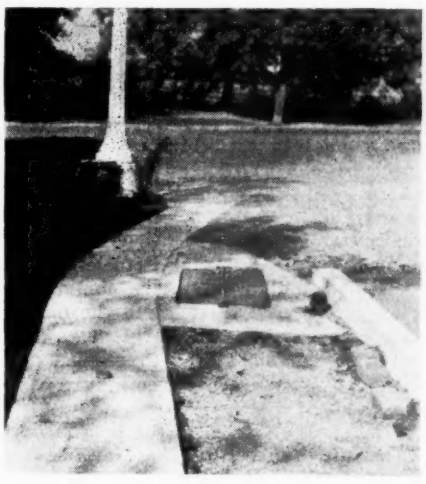
TO the oil trade of southwestern Ohio the stations of the Gerkins Oil Co. are known for their neatness, uniform appearance, and good equipment; to the motorist of the territory they are known for the convenience of their service.

Many of these conveniences are the result of ideas of Russell E. Gerkins, owner of the company who is a director of the National Petroleum Marketers' Association and the Ohio Petroleum Marketers' Association.

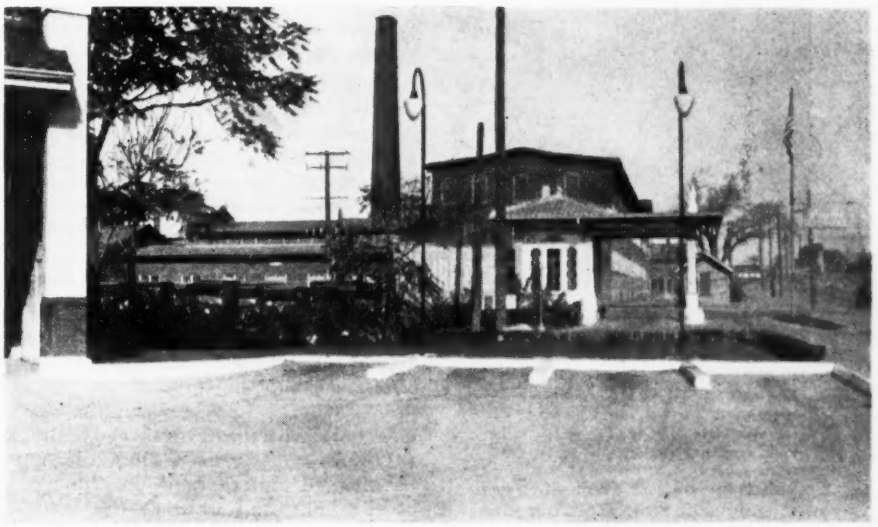
The service stations have red brick foundations, white tile superstructures and red Spanish tile roofs. The grounds are well landscaped and well planned for the rapid handling of a large volume of oil and gasoline trade with the usual free air, water and crankcase services. Not only convenience of the public was thought of by Mr. Gerkins in designing the stations but he also arranged for the quick handling of tank wagon deliveries at the stations and the quick repair or replacement of equipment.

All fill pipes are concentrated at each station in a manhole which is removed from the drives used by customers as far as is possible and reasonable. Sometimes it has been impossible to get space where a truck will be completely removed from the driveways. Such a case is at the station near the National Cash Register factories. How the difficulty was overcome is shown in an accompanying picture.

FOOT valves for the pumps have been concentrated in manholes, one or two at a station depending on the number of pumps. When it is necessary to replace a foot valve all that must be done is to remove the iron cover from the manhole, loosen four bolts and change the valve. This can be done in not more than a half hour and it is not necessary to bother the pumps.



Fill pipe concealed in manhole at a Gerkins Oil Co. service station, Dayton, O. Gauge pipes are along curb at right. Concrete track at left enables tank trucks to clear driveway for customers



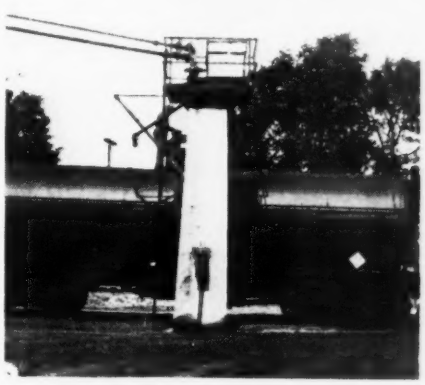
Stalls for cars getting air service at a Gerkins Oil Co. service station, Dayton, O. They prevent any motorist from monopolizing all four air lines

It has been necessary at one station to place the air hose at one end of the lot. Four air lines with hose were installed close together because of the shape of the lot. It would have been possible for one long automobile to monopolize all four hose. But to preclude any such hogging by selfish motorists, Mr. Gerkins had four stalls made, each curbed on three sides with concrete. Those curbs suggest to the motorist that he should head into a stall to inflate his tires.

ALL of Gerkins' oiling pits are enclosed. At several stations the oiling pits are in a wing of the main station building. At others the pit houses are built at some convenient corner of the station lot. The pits are closed at night so no one will fall into them. At some of the stations, folding doors on trolleys are used. At one station these doors could not be used handily so a large door of chain link fencing was made and suspended from the top of the pit house arch with hinges. During the day the door is pulled out of the way by means of small cables and a winch such as is used on large oil storage tanks to swing the outlet pipe.

Crankcase oil is dained into a square galvanized iron box which is mounted on a 2-inch swing pipe, as shown in the illustration. The oil flows into a tank and periodically a truck equipped with power pump calls at the station to collect the waste oil which is taken to the Gerkins bulk station and burned under the boilers.

GERKINS has an excellent bulk station with indoor tankage for lubricating oils. There is a repair and paint shop for trucks and equipment. Over the large garage is storage space for new cans and drums. These are neatly stacked and a quick inventory may be taken by simply counting the stacks, and multiplying by the number



Unloading pump tower at Gerkins Oil Co. bulk plant, Dayton, O. Switch box near base; iron ladder at left; housed motor and rotary pump on top. Swing unloading line with ball joint was being set when picture was taken

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of cans or drums each uniform stack contains.

Gerkins unloads all light oils overhead. Motor driven rotary pumps are used. The pumps and motors are mounted on columns which are taller than the tops of the storage tanks. A pump tower is illustrated.

The towers are alongside a spur track so that the dome can be reached with a short line of 2-inch pipe. The pipe that is lowered into the car of gasoline or kerosene is attached to a swing line with a ball joint.

Two lines lead from the pump to the tanks. One line 2½ inches in diameter is for kerosene and a 3-inch line is for gasoline. The pump lifts the gasoline or kerosene out of the car and then the liquid flows by gravity to the storage tanks. By having the flow lines larger than the line that leads from the car to the pump, back pressure is prevented.

Catch basin in drain pit on swinging pipe at a Gerkins service station, Dayton, O. Tool rack is suspended like the conventional seat that adorned many bath tubs before the "built-in" days

TWO gate valves have been placed in each of the lines to the storage tanks. In the line between the valves is a hole with bastard thread. Before the line can be used the hole must be plugged and there is only one plug at the bulk station to fit the holes in the two lines at each tower. The hole and plug is a safety measure to prevent the mixing of gasoline and kerosene because the man that unloads a tank car must of necessity mount the tower and adjust the valves and plug before he starts the pump. If he has placed the plug in the kerosene line when he has a car of kerosene spotted at the tower and has left the gasoline valves open a stream of gasoline through the hole warns him at once that something is wrong.

The pump is controlled by a switch in a vapor proof switchbox near the base of the tower as shown in the picture. The motor is in a vapor proof box at the top of the tower as an extra precaution against fire and to protect it from the weather. Gasoline vapors being heavier than air cannot rise to the level of the motor under normal conditions.

Gerkins pumps and trucks are painted red and grey. Lacquer is used on trucks thereby reducing the time of refinishing from a week or more to two or three days. After a truck is cleaned and rubbed, lacquer is applied with an air gun. A second coat may be applied the same day as the first because the lacquer dries in about 30 minutes. Lettering may be done the second day. Gerkins uses red lacquer on the truck tank, can racks and box, and cab, and grey on the chassis. On the doors of rear can boxes the spread red eagle emblem of the Independent Oil Men of America is placed on a great background. Beneath the emblem is the company's name and address.

Service station supplies are kept by the Gerkins company in a storeroom in the basement of a service station a short distance from the business district of Dayton. This is to enable the delivery of supplies to stations in any part of the city without having to go to the bulk plant in an outlying district. The service station superintendent keeps the key to the storeroom so a check against waste is maintained. The superintendent inspects each station at least once a day. The attendants are mostly middle aged men or active men just on the far side of middle age. They have been selected for their courtesy and idea of responsibility in the business.

Committee Pigeonholes Parker Fuel Bill

CLEVELAND, Jan. 21.—The oil industry has just escaped the possibility of more regulations from Washington. The committee of the house that considered the Parker bill, has voted not to report it out. This bill would have given power to the President to use in an emergency the old laws of 1922 governing coal and other fuel. The old law for regulating fuel applied, in the words of the act, to "using fuel and including fuel oil," which was construed at the time to cover gasoline too.

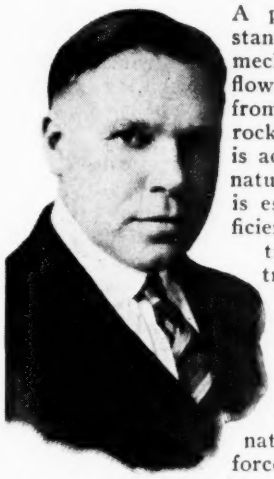
The aim of the Parker bill was to give the President control of coal in case of shortage or a high price. It was urged by New York and New England. There wasn't so much thought of the oil industry in connection with the Parker bill, but as Fayette B. Dow, Washington counsel of the National Petroleum Association, pointed out to the committee, it might be used to regulate the oil industry and he submitted arguments that there was no more need to regulate the oil industry than any other industry.

OMAHA, NEB.—J. A. Nelson has leased the properties of the Marland Refining Co. in Omaha and is operating them under the name of Nelson Oil Co., distributor, Marland oils, according to W. L. Bugbee, agent at Omaha for the Marland company.

Dissolved Natural Gas in Oil in Ground A Force That Aids Production

By Lester C. Uren
Professor of Petroleum Engineering, University of California, Berkeley

THE forces brought to bear by Nature in expelling petroleum from the pore spaces of the reservoir rock into wells drilled for oil recovery are of particular importance to the oil producer. A proper understanding of the mechanics of oil flow through and from the porous rocks in which it is accumulated by natural processes is essential to efficient well operation and control. The efficiency of recovery will depend to a large degree on the extent to which the natural expulsive forces are utilized. Improved methods of oil recovery must be based upon a full understanding of the mode of operation of the natural expulsive forces and be in harmony therewith.



LESTER C. UREN

In the first article of this series, printed in the January 19th issue of NATIONAL PETROLEUM NEWS, it was shown that, before an oil deposit is tapped by the discovery well, the oil and associated natural gas exist in a condition of pressure-temperature equilibrium; and that, due to the elevated pressure which usually prevails, a large volume of gas is forced into solution in the oil. By reason of this dissolved gas and the elevated temperature characteristic of deeply buried strata, the viscosity of petroleum is considerably reduced below that prevailing at normal atmospheric temperatures. Because of this reduced viscosity, it was suggested that the oils are in a condition to move with greater freedom through the porous reservoir rocks.

WHEN a reservoir sand containing oil charged with dissolved gas under high pressure is penetrated by a well, the equilibrium of forces that previously existed is disturbed. If the well is not shut in, and flow of fluids to the surface is permitted, the pressure within the reservoir sand in the immediate vicinity of the well is reduced. Reduction in pressure permits release of a part of the dissolved gas from the gas-saturated oil, and the gas thus released assumes the form of minute bubbles distributed through the viscous oil mass.

These bubbles, when first formed, are still under relatively high pressure, but as the pressure is further diminished, they expand. The effect is, literally, a physical expansion of the oil to a new volume many times its original size, an expansion which causes a part of the oil to be forced through the sands toward the centers of reduced pressure about the wells.

The potential expulsive effect of expanding gas originally dissolved in the oil may be demonstrated by recalling the data on gas solubility presented in the first article. It was shown, for example, that what was called the "approximate average" of eight different crudes was capable of dissolving about 105-cubic feet of natural gas per barrel at 500-pounds pressure.

THE solubility was found to be directly proportional to the pressure; hence, at 1000-pounds per square inch, a barrel of crude oil would be capable of retaining approximately 210-cubic feet of gas in solution, and at 1500-pounds, 315-cubic feet. Let us assume that a virgin oil pool has a "rock pressure" of 1000-pounds per square inch and that each barrel of oil contains 210-cubic feet of gas in solution. A barrel of oil occupies 5.6-cubic feet, and each cubic foot of oil would therefore contain 37.5 cubic feet of dissolved gas. Now, if the pressure is reduced to atmospheric, and the gas thus released from solution is retained within the oil in the form of bubbles, each cubic foot of the original oil will expand until it occupies 38.5-cubic feet (37.5 plus 1).

The space within the oil sand available for the storage of oil and gas, however, remains constant, and, in order that expansion to atmospheric pressure may occur, 97% (37.5 divided by 38.5) of the oil and gas must be expelled from the sand into wells. The theoretical recovery of oil by gas expansion from 1000-pounds initial pressure, should therefore be 97%. From 500-pounds initial pressure, it would be nearly 95%.

WHILE the theoretical maximum recovery of oil from the reservoir sand by gas expansion is high, practically the expansive effect of the dissolved and occluded gas is very imperfectly applied, so that the actual efficiency of extraction is much lower. Actual recoveries[1] in producing fields are reported to be as low as 15 or 20% by many authorities.[2] Mining operations within the oil sands in the Pechelbronn oil field in Alsace have indicated that the total recovery by producing to the lower limit of economic recovery through wells, was only 16.7% of the total original oil content.[3] Recovery estimates for the Bradford field of Pennsylvania by ordinary methods of flowing and pumping, are placed by Mr. David White[4] of the U. S.

[1]Lewis, J. O. "Rejuvenation of Depleted Fields," Record of Public Hearings before the Federal Oil Conservation Board, Washington, February, 1926.
[2]Lewis, J. O., "Methods of Increasing the Recovery of Oil from Wells," U. S. Bureau of Mines Bull. 148. See particularly pages 25-32.
[3]De Chambrier, P., "Working of Petroleum by Means of Shafts and Galleries," Journal, Inst. of Petroleum Technologists, London, Vol. 7, pages 178-189.
[4]White, D., Address before the Northwestern Pennsylvania Oil Producer's Assoc., October, 1924. See Oil City Derrick, April 20, 1925.

BASIS OF CONSERVATION ISSUE EXPLAINED BY UREN

THIS second article in the new series on improved production methods appearing exclusively in National Petroleum News is most timely, in that it gives the reader the fundamental facts that have been learned the past few years on the effect of natural gas on oil held in the ground.

These facts are the basis of the present thought and discussion within the industry on the desirability of legislation forcing producers to hold back-pressures on their wells. The knowledge that has been gained, through research work and experiments, of the natural aid gas exerts in forcing oil from the ground has made some people believe the holding of the gas in the ground to aid production should be compulsory.

This is only one development in improved production practice come to light in recent years that may greatly affect actual methods in use in oil fields. These developments generally are to be reviewed by Prof. Uren in this series of articles.

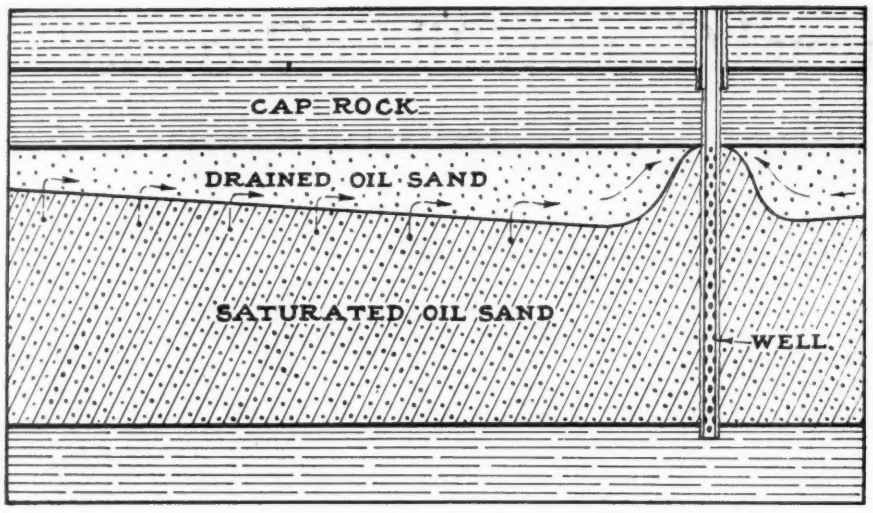


Fig. 1—Sketch illustrating escape of gas through partially drained channel in top of oil sand

Geological Survey, as low as 12½ per cent.

The reason for the low efficiency of gas expulsion in all probability lies in the fact the gas does not remain occluded within the oil after it is released from solution, but escapes to the well outlets by translation through the oil, or through oil-drained channels above or within the oil mass. (See Figure 1). Gas moves with greater freedom than oil through the minute spaces of the reservoir sand, and monopolizes the drainage channels to the exclusion of the more viscous and slow-moving oil.

THAT the efficiency of gas expulsion is low can be demonstrated by comparing the relative volumes of gas and oil produced from oil wells. In many fields during the period of "flush" production, wells produce from 1000 to 4000 cubic feet of gas per barrel of oil. If the rock pressure is 500-pounds per square inch, an average barrel of oil is capable of absorbing about 105-cubic feet of gas; but if 1000-cubic feet of gas flow from the well with each barrel of oil, it is clear that about nine times as much gas is being produced as the oil is capable of dissolving at the prevailing pressure.

In other words, if we assume that all the gas was originally dissolved in the oil, each barrel of oil brought to the surface is produced only at the expense of gas from nine barrels of "dead" oil left in the sand. In this case, the efficiency of gas expulsion, due to escape of the gas from the oil in the sand, is only 10%, and with higher gas-oil ratios, the efficiency will be correspondingly reduced. Gas-oil ratios can seldom be reduced below 500-cubic feet per barrel in a flowing well, and, unless large quantities of gas are supplied from sources outside the oil mass, it would therefore seem that the efficiency of gas expulsion may only occasionally exceed 20%.

If we assume that crude petroleum as stored within the earth is saturated with gas under high pressure, when the pressure is partially reduced by drainage of some of the oil and gas through wells, a portion of the dissolved gas will be released and will assume the form of minute bubbles. Each pore cell within the oil sand contains one or more gas bubbles, spherical in form in so far as the form of the pore spaces permit, and separated from each other by films of oil which occasionally break to permit two or more small bubbles to form larger ones.

In this stage, the oil and gas mixture may be regarded as of the nature of an emulsion, the gas being the internal phase. When first formed, these bubbles are exceedingly minute, but are still under high pressure; and as the pressure within the oil reservoir is gradually reduced, they continually expand, forcing the oil toward the well outlets. The pressure within the sand, of course, is not uniform, but increases progressively as the distance from the well increases. Each expanding bubble can therefore displace oil only in one direction: that is, toward the locus of reduced pressure within the well.

WE can perhaps, best explain the mechanics of gas expulsion by reference to Figure 2 illustrating a portion of a drainage channel composed of a series of communicating sand pores, terminating at the wall of a well. Only a few pore cells are shown constituting that portion of the drainage channel in the immediate vicinity of the well; but it will be understood that a multitude of communicating pore cells extend the channel indefinitely toward the right from the sketch. The wall of an intersecting well is assumed to be at the left of the sketch.

Originally, all cells were under uniform pressure, and all gas dissolved in the oil, but, when release of pressure within the well disturbs the equilibrium, one or more gas bubbles form in each cell. That formed in cell No. 1, nearest the well, promptly escapes to the well, carrying some of the surrounding and intervening oil with it. Release of pressure due to evacuation of the gas and a part of the oil from cell No. 1, creates a differential pressure between it and cell No. 2.

The gas bubble formed in cell No. 2 therefore expands and escapes to cell No. 1, where it undergoes further expansion and then escapes to the well, carrying with it a little of the oil from cell No. 2 and some of that left in cell No. 1 after the escape of its original gas bubble. In the same way, a bubble of gas passes from cell No. 3 to No. 2, thence to No. 1 and to the well, carrying along some of the oil which fills the intercommunicating capillary channels with each successive expansion.[5]

IF the reader will now visualize a channel, perhaps hundreds of feet in length, composed of many thousand such pore cells, containing bubbles occasionally moving from pore to pore, accompanied by simultaneous displacement of oil, he will have grasped the modern conception of the mechanics of gas expulsion. The drainage system of a well consists of a multitude of such channels, radiating outward in all directions from the well, and communicating with each other, both laterally and vertically.

The influence of the reduced pressure within the well gradually extends outward in all directions from the well as a center, each pore cell traversed by the gas bubbles representing a definite pressure loss. When these increments of pressure loss build up to a total equivalent to the difference between the "rock pressure" and the pressure within the well, the system comes into equilibrium and no further movement of gas or oil toward the well occurs. This determines the normal radius of drainage of the well, and it is apparent that the drainage radius under such conditions will vary directly with the differential between the maximum rock pressure and the pressure maintained within the well.

[5]For a good explanation of oil expulsion by occluded gas expansion, the reader is referred to that by Mr. S. J. Dickey, in "American Petroleum—Supply and Demand," pages 83-86. This is the report of the Committee of Eleven, American Petroleum Institute, to the Federal Oil Conservation Board, published in book form by the McGraw-Hill Book Co., in August, 1925.

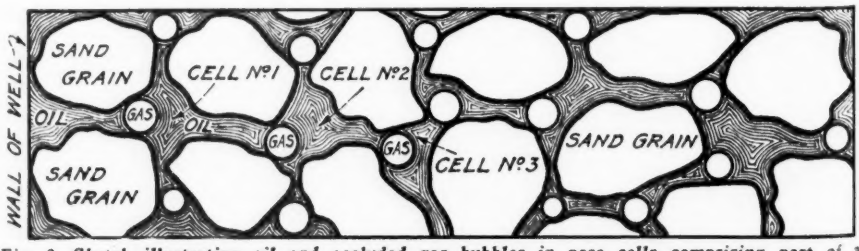


Fig. 2—Sketch illustrating oil and occluded gas bubbles in pore cells comprising part of a drainage channel

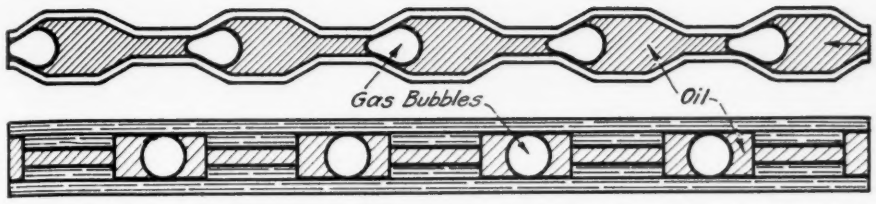


Fig. 3—Types of "Jamin" tubes used by Herald

Herald[6] has recalled and extended certain experiments performed by Jamin[7], an early French physicist, in which chains of alternating gas bubbles and liquid filaments, were forced under pressure through capillary tubes containing occasional constrictions. There is a close analogy between the apparatus employed by Jamin and the channels of intercommunicating sand pores we have been considering, and the conclusions reached in these experiments would seem to have a direct bearing on the mechanics of gas expulsion.

JAMIN'S experiments indicated that, in such a series of alternating globules of gas and liquid, in irregularly-shaped channels of the type described, the gas tends to accumulate in the enlarged portions of the channel, while the liquid is concentrated in the capillary openings between gas bubbles. The walls of the channel remain wet with the liquid. Figure 3 illustrates two forms of "Jamin tubes" used by Herald in demonstrating the effects of gas and oil movement. The tubes were of capillary size, and were first filled with oil. Gas was then forced in at one end until some escaped at the opposite end. Each enlarged section or cell along the tube was then found to contain a bubble of gas, the gas being surrounded by thick oil films, while the constrictions between cells remained full of oil.

If sufficient pressure is applied to such a chain of alternating globules of gas and liquid at one end of the channel, translation of the fluid will occur; but in order that the liquid may move through the channel, it must carry the gas bubbles with it, and at each constriction the gas bubbles must be deformed in adjusting themselves to the variable size and shape of the channel. Due to operation of the surface tension of the liquid, the gas bubbles tend to assume spherical form, and therefore resist this distortion.

In reporting his observations on these experiments, Herald states that the gas bubbles appear to "over-hang" each contraction in the tube as the pressure is applied, and eventually "break and make" as the bubbles pass along the tube. It is further reported that, if the amount of liquid is sufficiently small, it will tend to collect and remain in the capillary channels, while only gas escapes when pressure is applied; but, if a greater amount of liquid is present than necessary to fill the capillary channels between cells, some of it will take up a position within the cells, and in this case, application of pressure will result in both gas and oil being discharged from the tube.

THE principal factors determining the critical pressure necessary to cause movement of the gas bubbles from pore to pore, are found to be the surface tension of the liquid in contact with the gas, diameter of the capillary channels between cells, and the form of the approaches to the channels of communication between cells. Integration of the individual resistances to movement offered by the gas bubbles along a channel provides a measure of the minimum pressure necessary to cause movement. To this must be added that necessary to overcome such friction as the walls of the channel may offer to the movement of the liquid.

A large part of the total pressure loss, however, is consumed in deforming gas bubbles, and the necessary pressure is roughly proportional to the number of gas bubbles in the channel, and to their size and the pressure of the gas they contain. Probably more pressure is required to deform and force a large bubble of gas through a small aperture, than is necessary for a small bubble; and more energy will be required if the bubble is filled with high-pressure gas than if the pressure is low.

THE intercommunicating pore spaces of an oil-bearing sand present a condition closely analogous to that existing in the Jamin tube experiments discussed above. Herald has aptly described a fine-grained oil sand as "a bundle of capillary tubes radiating in all directions from the well." The pore spaces between sand grains form a series of alternating contractions and dilations in the channels through which the oil must move. Gas liberated from solution in the oil by partial release of pressure occupies the larger pore spaces, while the oil is forced into the smaller communicating capillary channels. There is thus a continuous chain of alternating gas bubbles with separating filaments of oil extending in all directions through the sand, both vertically and horizontally. The pressure increases with the distance from the wells, hence we should expect to find the gas bubbles becoming progressively larger as they approach the wells, and occupying a proportionally larger part of the free space available within the channel for the movement of fluids.

Since the volume of oil within the range of influence of a well increases as the square of its drainage radius, we may say that the maximum volume of oil recoverable is proportional to the square of the maximum effective rock pressure. Herald has discussed this relationship from the mathematical standpoint, based on the fundamental conceptions of the Jamin tube experiments, and has arrived at a similar conclusion which he has expressed as the "Jamin Law:"

"The potential volume recoverable from a reservoir under capillary control, is proportional to the square of the potential pressure at the orifice."

Herald believes that gas pressure is the only expulsive force active in reservoirs in which capillarity is the controlling factor. He shows, by mathematical comparisons, that there is an

[6]Herald, S. C., "Oil and Gas Reservoirs Present Good Study of Capillary Action," Oil and Gas Journal, Feb. 11, 1926, p. 98. See also, "Scientists Aid to Petroleum Engineer," Oil and Gas Journal, Feb. 19, 1925, p. 64, by same Author. These articles are a part of a series written by Mr. Herald, dealing with the mathematical and physical concepts of oil and gas drainage.

[7]Jamin, M. J., "Cours de Physique," 3rd edition, 1871, Vol. 1, pages 344-348.

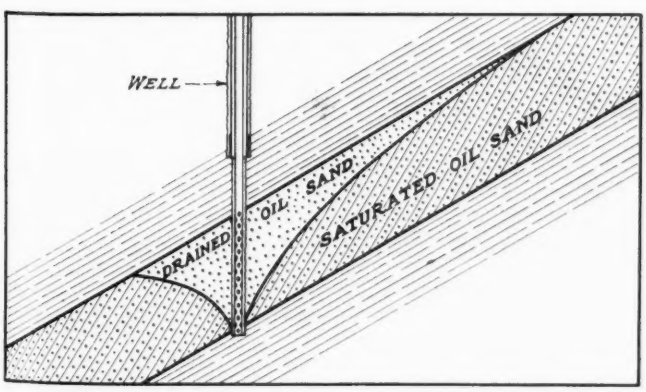


Fig. 4—Sketch illustrating superior drainage of up-dip portion of reservoir sand in a steeply inclined structure

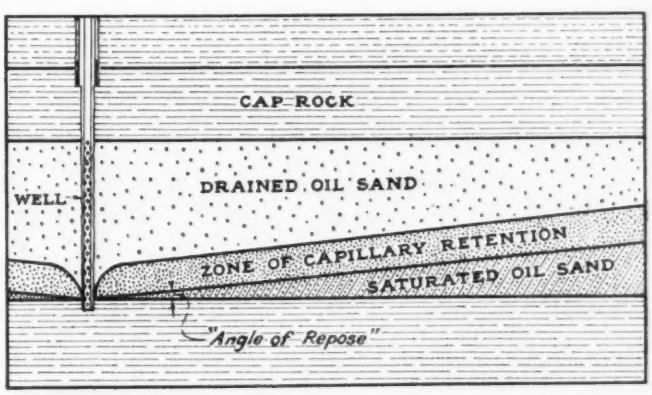


Fig. 5—Sketch illustrating zone of capillary retention above and undrained oil sand below the "angle of repose"

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important distinction to be drawn between the effect of pressure applied behind or above the oil (which he terms "volumetric control"), and expansion from within in openings of capillary size, (Capillary control). In volumetric control reservoirs, the velocity of flow is said to vary as the one-half power of the pressure, while in the case of capillary control drainage, the velocity of flow varies as the three-halves power of the pressure. To the writer, it seems probable that in most cases both types of drainage are operative simultaneously, so that some exponent intermediate between the two computed values will apply.

The expulsive effect of gas originally dissolved in the oil, as described in the foregoing sections, may be characterized as physical expansion from within. In addition to this effect of gas dissolved and occluded within the oil, large bodies of free gas trapped in the crest of the structure and at other favorable points above the general oil surface will develop a considerable expulsive effect due to static pressure from above or behind a column of oil. Consider, for example, a typical occurrence in which a large body of high pressure gas is trapped at the crest of a dome, above the general surface of a body of oil which occupies the lower flanks of the reservoir stratum.

Perhaps the gas is under high pressure, say 1000 pounds or more per square inch, so that its influence may be felt for considerable distances through the reservoir sand. A well drilled at such a point as to intersect the reservoir sand below the gas-oil surface, will profit by the static pressure of the gas, which, in its effort to expand toward the region of lower pressure in the vicinity of the well, will continually force the intervening oil through the sand into the well. If properly conserved and not permitted to escape, such a body of high-pressure gas in the crest of the reservoir stratum may account for a considerable percentage of the ultimate oil recovery.

At any point within a liquid, a hydrostatic pressure exists which is proportional to the depth of the point below the liquid surface. This hydrostatic pressure exists whether the liquid is in an open receptacle, or stored within the pores of a sand. It is conceivable that, in a thick or steeply-inclined oil sand, without impervious "partings," the hydrostatic "head" developed within the oil mass may exert an appreciable influence on the efficiency of drainage.

Figure 4 illustrates a theoretical case in which a continuous body of sand of uniform thickness and texture, is assumed to dip at an angle of 30-degrees from the horizontal. It seems evident that the well must drain the "up-dip" portion of the sand more effectively than that portion which is structurally below the point at which the well penetrates the sand. Again, suppose that a body of sand containing lenses of shale is 100-feet thick.

Circuitous circulation of oil about the shale lenses permits of vertical movement of oil throughout the full depth of the oil zone. The hydrostatic pressure of the oil in the bottom of such a reservoir sand would be upwards of 40-pounds per square inch greater than at the top. Oil flow from the lower portions of the productive zone would be proportionately accelerated, assuming that a corresponding liquid "head" within the well were not operative.

After the gas associated with a petroleum deposit has been dissipated to a point it is no longer effective in moving oil through the sand to the wells, a part of the residual oil in the sand will still continue to flow toward the wells by gravitational seepage. The presence of gas bubbles within the sand pores will in part prevent free gravitational drainage, and capillarity will hold a certain proportion of the oil in the finer capillary sand openings with a force which exceeds the pull of gravity; but the residual gas gradually escapes from the oil to the upper portion of the reservoir sand, and such oil as is not held by adhesion on the sand grains is then free to drain into the wells until the level of a permanent zone of capillary retention in the bottom of the productive stratum is reached.

It seems probable that gravitational drainage proceeds until a certain "angle of repose" of the oil in the sand is reached, which is a slope just sufficient to overcome the sand resistance to movement. The sand resistance, however, is slight, due to the slow rate of movement of the oil, and it seems prob-

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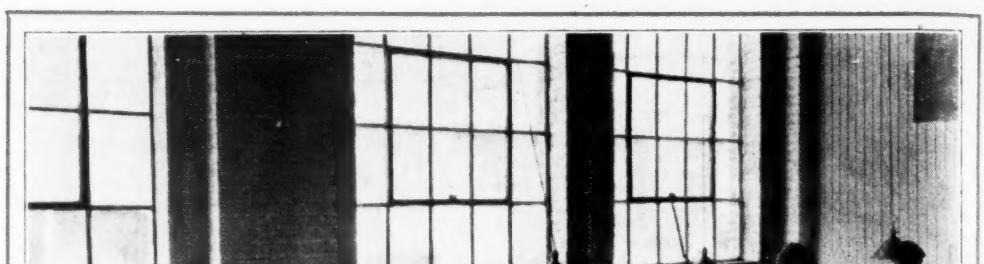

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able that this "angle of repose" of oil in sand is a low one, possibly of the order of 5°, according to certain laboratory tests performed under the direction of the writer. Figure 5 will serve to illustrate the writer's conception of gravitational drainage as limited by the "angle of repose" and the zone of capillary retention.

The efficiency of gravitational drainage may be high under favorable conditions. If the oil is of low viscosity and the sand grains large and porosity high, recoveries of as much as 85% of the total oil content of an unconsolidated sand have been secured in laboratory apparatus. Though these gravitational adjustments are exceedingly slow, probably too slow to yield commercial production of oil under present market conditions, if the walls of the wells are kept free of detrital material and the pores of the reservoir sand are not permitted to become clogged with paraffin or other material impervious to the passage of oil, the ultimate recovery of oil obtainable by this means is probably greater than that which may be realized by normal gas expansion.

EVERYWHERE about the edges of an oil deposit, the strata which contain the oil are saturated with water, often under high hydrostatic pressure. As the oil and gas are extracted from the reservoir sand, this "edge-water" encroaches up the dip of the strata toward the productive wells. This gradual advance of the edge-water toward the crest of the structure has a scavenging effect on the residual oil left in the sands. Much of the oil held by capillarity in the sands is thus displaced, and at times the edge-waters contain certain dissolved salts which apparently have the property of releasing a part of the adherent oil. Oil so concentrated along edge-water lines constitutes an important contribution to the total recovery of oil in some fields.

While edge-waters are often under high pressure, the rate of encroachment is generally slow, and it must be conceded that the expulsive effects on the oil are limited to the immediate vicinity of the edge-water lines. In certain parts of the Coalinga Field of California, the rate at which the edge-water lines are encroaching toward the heart of the field, has apparently averaged about 150-feet per year.[9] In the fine-grained sands of Bradford, flood waters used in displacing oil from the sand, though applied under a pressure of 350-pounds per square inch, advance through the sands at an average rate of only 35-feet per year.[10] The hydrostatic pressure of edge-water cannot conceivably influence the movement of oil for more than a few hundred feet from the edges of the "pool," under normal conditions.

The purpose of this article has been to bring together from various sources modern theories, only recently developed, in explanation of the forces active in expelling oil from the reservoir rock into wells. Three forces have been found to be operative: first, the pressure of expanding natural gas; second, static pressure effects developed by gravitational force; and third, the hydrostatic pressure of edge-water. Of these three forces, the first is generally regarded as the most effective, and the mechanics of gas expulsion has therefore been stressed in the discussion offered.

Gas pressure has been shown to be effective in oil expulsion in two different ways: first, by expansion of occluded gas originally dissolved in the oil under elevated pressure; and second, by the static pressure of larger bodies of free gas trapped above the general oil surface. The efficiency of oil expulsion by gas expansion has been shown to be low, due to the tendency of the gas to escape from the oil to the well outlets through oil-drained channels. Gravitational drainage was found to be effective, and capable of ultimately yielding a large percentage of the original oil content of the reservoir rock, but is very slow in its action. Hydrostatic edge-water pressure effects were shown to be of but local significance and slow in their action.

The next article in this series will review what is known of the retentive forces, or those opposing expulsion of oil from the reservoir sand.

[9]Uren, L. C., "The Elements of the Oil-Well-Spacing-Problem" Bulletin, Am. Assoc. of Petroleum Geologists, Vol. IX, p. 193-216, March, 1925.

[9]Chan, C. Y., "Effects of Water Incursion in the Coalinga Field, California," a thesis performed under the direction of the writer, University of California, May, 1922.

[10]Lewis, J. O., Bull. 148, U. S. Bureau of Mines, i.b.i.d., p. 111.

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Sodium Chromate is Remedy for Corrosion In Natural Gasoline Plants

By W. R. Finney
Superintendent, Gas and Electric Depts., Midwest Refining Co., Casper
and
H. W. Young
Research Engineer, Midwest Refining Co., Casper, Wyo.

THE formation of scale in boilers and other industrial equipment, and the corrosion of such equipment, are closely related problems. Since in the petroleum industry these problems cover a very broad field, this paper has been confined to the effects of scale and corrosion on gas engines, compressors, pipes and fittings, used in plants extracting gasoline from natural gas, and the steps taken in arriving at a workable plan for combating these evils at the Midwest Refining Co.'s plants in the Salt Creek field, Wyoming.

Eliminating, or at least minimizing, the many deleterious effects occasioned by the use of bad water in jackets and cooling systems of gas engines and compressors has been the subject of much study for many years but no generally accepted plan has been evolved. The problem was unusually difficult at Salt Creek, as the severe winters of Wyoming bring operating conditions quite different from those encountered in warmer states, and the water available was especially bad.

While the conditioning of water to prevent scale and to lessen corrosion may not be a particularly difficult problem in plants in large industrial centers, it becomes much more difficult when attempted at plants remote from railroads and by men without previous experience to guide them. In fact this difficulty has been so great in the Wyoming oil fields that until comparatively recently it has been the practice to allow much equipment to be ruined rather than to attempt corrective measures.

At the Midwest plants this problem was given attention first by the plant men and later by both plant men and laboratory staff. To the latter it was simply one of many problems which arise in connection with field and plant operations, which must be studied and, if possible, solved. Many mistakes were made during the course of this investigation, but since mistakes, properly interpreted, are of value in guiding one's steps aright, it is believed that a review of the different stages of development which have led up to the present method of handling this problem will prove of interest to the industry.

THE first gasoline plant in the Salt Creek field was built by the Midwest Refining Co. in the fall of 1917.

THE accompanying paper was prepared to be read before the A. I. M. M. E. annual meeting in New York in February. It is published herewith with the permission of the society for the purpose of bringing out discussion. Discussion of the paper should preferably be presented in person at the New York meeting but if this is impossible, discussion may be sent in writing to H. Foster Bain, editor of the American Institute of Mining & Metallurgical Engineers, 29 West 39th st., New York, for presentation by the secretary or other representative of the authors. This paper is copyrighted by the society.

The plant has been enlarged from time to time since then, and 20 booster stations have been installed for collecting gas throughout the field. At present there is in operation in the main extraction plants the following equipment.

Eighteen 160-hp. twin two-cycle Bessemer gas engines belted to 9 two-stage 16 by 8 by 16 Ingersoll-Rand compressors and 9 two-stage 16 by 8 by 16 Laidlaw compressors, operating at 0 lb. intake and 250 lb. discharge, pressure.

Seven 970-hp. twin four-cycle tandem double-acting Cooper gas engines direct-connected to two-stage 32 by 15 by 36 Cooper compressors, operating at 0 lb. intake and 250 lb. discharge, pressure.

SIX 165-hp. twin four-cycle single acting Cooper gas engines direct-connected to 5 by 20 Cooper compressors, operating at 200 lb. intake and 400 lb. discharge, pressure.

Seven 165-hp. twin four-cycle single-acting Cooper gas engines direct-connected to 17 by 20 Cooper compressors, operating at 0 lb. intake and 35 lb. discharge, pressure.

In the 20 booster stations there are 57 Bessemer 80-hp. two-cycle direct-connected gas engine-driven compressors and 16 Clark 80-hp. two-cycle direct-connected gas engine-driven compressors. The compressors are Bessemer, Clark and Laidlaw in sizes 14 by 20, 16 by 20, 18 by 20, 20 by 20, and 23 by 20, with intake pressures ranging from 12 in. of mercury vacuum to 0 lb. and discharge pressures ranging from 3 to 25 pounds.

In addition to the water jackets on all gas engine and compressor cylinders, the steel piston rods of the 970-hp. Coopers are water-cooled.

THE gas engines and compressors in the plant first placed in operation were cooled by pumping raw water through the jackets, the water being cooled in an ordinary cooling tower where it was sprayed through nozzles. This method was very effective in cooling the water, but the windage loss was high and the concentration of salts in solution by evaporation led to serious complications. Such concentration caused a rapid deposition of scale inside the jackets and in the pipes carrying the water from the jackets to the towers. The heavy scale inside the jackets reduced the heat transfer, which in turn decreased the power developed and caused damage to the engines due to excessive heating of the cylinders. The net effect was a lowering of plant capacity and general efficiency.

Several attempts were made to remove the scale with dilute hydrochloric acid but it could not be satisfactorily removed in this way. Failure was probably due in part to the presence of a high proportion of calcium sulfate in the scale, which greatly retarded solution by the acid, and in part to timidity on the part of those in charge of the work. But even had the removal of scale with acid been complete the time lost to the units in applying the treatment would have been sufficient to condemn the process.

To give a better idea of the difficulties involved, the analyses of several waters which were available at that time are given. Since the seasonal variations in these waters are often quite large, two analyses are given, representing roughly the two extremes. The proportions are in parts per million, which in the headings is abbreviated to "P. P. M." (See table top page 83)

No analyses of the concentrated waters of that period are available but several were made later on waters which should have been practically

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Analyses of Waters Showing Range of Saline Content

	Salt Creek P. P. M.		Castle Creek P. P. M.		Pond P. P. M.	
Calcium sulfate	1,060	333	1,210	1,251	762	858
Magnesium sulfate	1,105	138	1,050	1,140	714	655
Sodium sulfate	2,010	88	8,315	3,540	2,310	2,320
Sodium chloride	39	20	133	225	690	389
Sodium bicarbonate	465	135	680	737	380	513
Sodium carbonate	0	0	44	0	0	0
Total solids	4,679	714	11,432	6,893	4,865	4,735

identical with the earlier waters. The following is representative:

Representative Analysis of Concentrated Waters

	Concentrated Water P. P. M.
Calcium sulfate	4,250
Magnesium sulfate	4,250
Sodium sulfate	25,800
Sodium chloride	1,145
Sodium bicarbonate	622
Sodium carbonate	33
Total solids	33,142

THE second step differed from the first in only one particular, condensed water was substituted for hard water. The high altitude, low humidity, and the prevalence of high winds, combined to make evaporation and windage losses so high that on the score of expense alone this system could not be considered. In addition, the condensed water proved so corrosive that failure of piping and Cooper pistons necessitated frequent shutdowns and costly replacements. But neither at this time nor later was there any trouble experienced with corrosion inside the cast-iron jackets of any of the units.

Since it was impossible to conserve water in the open sprays, and the oxygen absorbed in those sprays was proving so destructive, it was thought that the loss of circulating water would be greatly lessened and greater opportunity given for combating corrosion, by the use of the closed system, which consists of circulating the cooling water through banks of coils which were cooled by spraying water over them. The results justified the first hope, but the second was not realized, although several corrective measures were applied.

TO exclude air as far as possible from contact with the circulating water, the pipes leading from the Cooper jackets which normally spill the water into bowls, from whence it gravitates to the pumps, were connected directly to the pipes leading to the pumps, and several unsuccessful attempts were made to connect the lines from the water-cooled piston rods directly to the lines leading to the pumps. Corrosion and pitting continued, regardless of all these precautions.

A large metal box filled with steel shavings was then placed in the system to remove the oxygen. The volume of rust formed was sufficient in a short time to greatly impede the flow of water through the box, also a considerable amount of iron passed into solution and was deposited in other parts of the system. Some experiments were also made with oxygen removal by passing the water through a large pipe packed with zinc shavings sprinkled with copper sulfate solution. Some very encouraging results were obtained with this method but the performance was very erratic. Any oil or rust in the water coated the zinc and rendered it inert, while exposing the wet zinc to the atmosphere for only a few minutes resulted in rapid oxidation and total loss of activity.

For a short period at one of the plants lubricating oil was circulated instead of water. This naturally solved the corrosion problem, but, due to the low specific heat of the oil, the heat transfer was very poor and the units ran too hot to operate efficiently. Some consideration was also given to the possibility of obtaining piston rods and piping made of alloy steels known to possess special corrosion-resisting properties. This was abandoned, however, on account of the cost.

SINCE none of these expedients promised relief from corrosion a fourth was tried. Raw water containing scale-forming solids was mixed with the condensed water, in the hope that a light scale would form which would not seriously interfere with the heat transfer but would protect the metallic parts of the system from corrosion, particularly those which were exposed to considerable heat, as the Cooper piston rods. Experience proved that the scale formed was not uniform, some parts being covered with a scale so thick that it interfered with the heat transfer while near by the metal was quite unprotected. The exposed parts corroded very rapidly. It seemed quite impossible to regulate the volume of raw water to give efficient protection from this intense localized corrosion.

Since it is generally recognized that as a rule slightly alkaline waters are less corrosive than neutral waters, it was thought that by using water treated by the lime-soda ash method the formation of scale could be prevented and at the same time corrosion minimized. The lime-soda ash treatment was carried out in 100-bbl. tanks by the intermittent system, the water being heated to at least 80° F., by injecting steam, and stirred with compressed air after the addition of the chemicals. As a rule the hydroxide and carbonate alkalinities were about 40 and 60 parts per million, respectively.

After some experience with this water it was found that corrosion was as bad, if not worse, than with condensed water. Also there was considerable deposition of sludge in the jackets, which caused damage and necessitated shutdowns for cleaning.

The presence of the sludge was probably due in part to the water being pumped from the treating tanks before settling was complete, and in part to the precipitation of residual calcium and magnesium compounds in the cylinders, where high temperatures obtained. The fact that air was used in mixing the water during the addition of the chemicals may have caused corrosion to be more severe than it would otherwise have been. However, had even an inert gas been used for stirring, it is hardly probable that the results would have been very materially different.

THE experience gained over a period of several years, as covered by the methods and schemes described above, led to renewed efforts in the spring of 1924 to find some way of treating the water used in the closed cooling systems so that no damage or loss of time would be suffered through scale and corrosion. This proved to be a very difficult problem and required considerable time and the best efforts of the technical staff. A search of the literature revealed a number of references to certain substances which in solution inhibit corrosion. A number of tests were made, following the method outlined by Cushman and Gardner in 1910[1] which indicated that 2 lb. of potassium dichromate, or 2 gal. of sodium silicate, per 1000 gal., would inhibit corrosion.

In carrying out these tests a number of oil sample bottles were prepared and several were filled with water from each sample to be tested, dichromate was added to all but one and a new 10-penny nail placed in each bottle. By varying the amount of dichromate added to the bottles containing water from each sample, and by running duplicate sets, one at much higher temperature than the other, data were obtained for a wide variety of conditions. In those tests in which natural, condensed, or treated waters were used, without the addition of any dichromate, corrosion of the nails started in a very short time, the higher the temperature the quicker and more vigorous the action. It was found that even very small amounts of dichromate exercised a retarding influence, and when the proportion reached 2 lb. of dichromate per 1000 gal. of water corrosion was practically inhibited. Such nails could be left in the solution in open bottles for months without showing any effects of corrosion aside from a slight tendency in some test on the sharp edges.

TESTS were made at that time at one of the booster stations which indicated that the use of dichromate was beneficial, but at the Cooper plants a much more extended test was made with sodium silicate. The latter proved efficient as an inhibitor of corrosion and was quite satisfactory so long as condensed water was available, but when the available condensed water was insufficient and hard water was turned in,

[1] A. S. Cushman and H. A. Gardner: Corrosion and Preservation of Iron and Steel. 1st ed. (1910) 111.

a heavy deposition of sludge occurred, which in a comparatively few months became so serious that the use of silicate was abandoned.

The sludge formed under these conditions consisted largely of gelatinous silica. A brief study of the reactions between the silicate and the scale-forming constituents of the water reveals the reason for the disposition of the silica. For example, the reaction with calcium sulfate is as follows:

$$CaSO_4 + Na_2O.\ SiO_2 = CaSiO_3 + Na_2SO_4.$$

Since in the silicate used the ratio of sodium oxide to silica is 1:3.25, it is evident that 2.25 parts of silica must precipitate for each part usefully employed. Incidentally, this explains why sodium silicate is not an efficient agent for treating water which is under ordinary conditions of temperature and pressure.

As the results of the use of these inhibitors were quite encouraging, the laboratory staff was asked, late in 1924, to resume work on the problem and devote all possible time to it until a satisfactory solution was developed. Since it seemed out of the question to use sodium silicate under all the conditions which were likely to arise, an extended investigation of the use of potassium dichromate was begun, in which the earlier tests were repeated on a broader scale, and a satisfactory method of plant control was worked out.

THE initial step in applying the results of these tests in plant practice consisted in using condensed water as much as possible in all the systems and maintaining the dichromate strength as nearly as possible at 2 lb. per 1000 gal. This system, modified somewhat as noted below, was installed in all the extraction plants in the spring of 1925, and since then corrosion has been eliminated.

Later experiments proved that sodium chromate, although it contains 52.5 per cent of water of crystallization, is as effective, pound for pound, as potassium dichromate. Sodium chromate has been substituted for dichromate in all the plants, since it is cheaper and one noted authority[2] states that it is to be preferred to dichromate as an inhibitor of corrosion.

Every two weeks a sample of water from each plant is brought to the laboratory where it is tested and a report is delivered to the production foreman who, knowing the volume of water in circulation at each plant, issues orders as to the amount of chromate to be added as makeup. The chromate strength usually falls considerably below normal toward the end of the two-week period but no ill effects have been noted to date. At the present time consideration is being given to the possibility of extending the time between periods of normal strength to one month. Such a change would, of course, necessitate careful watching during the initial period.

The method of testing these samples in the laboratory may be of interest. A solution of chromate of a strength of 1 lb. per 1000 gal. (0.1198 gm. per l. of solution) is prepared and kept in a stoppered bottle. An approximately N/10 solution of sodium thiosulfate is prepared and standardized for this purpose by titrating to the disappearance of the blue color 100 cc. of the chromate solution, to which about 1 gram of potassium iodide and 10 cc. of strong hydrochloric acid and a few drops of starch solution have been added. In making a regular test 100 cc. of each sample is titrated and the chromate strength obtained by dividing the cc. of thiosulfate consumed in the test by the cc. required for titrating 100 cc. of the 1-lb. solution.

At times the available condensed water is insufficient for makeup, and hard water is turned into some of the systems. Immediately scale begins to form but no corrosion occurs. Usually in a comparatively short time condensed water is again available and is turned in. This slowly dissolves the scale deposited during the use of hard water, and, in such cases, the calcium and magnesium content of the water remains high for a considerable time. In one notable case, where very hard water was used for several months and the scale built up in the jackets to such thickness that it interfered seriously with the heat transfer, it required a number of months, in which a considerable volume was regularly wasted and replaced with condensed water, before the calcium and magnesium content of the circulating water fell to normal, indicating that the scale had all been removed. During this period the consumption of chromate was high, as each addition of condensed water called for more chromate. At no time, however, was any trouble experienced with corrosion.

AS is often the case in such work unexpected information was obtained. For example, at one plant where the amount of chromate required for makeup was much greater than at any other plant, inquiry revealed that an inordinate amount of makeup water was used. The natural explanation was that there was a serious leak in some of the underground piping. Extended search revealed such a leak, and after it was repaired the consumption dropped to normal.

The method of adding the chromate to the circulating system varies at the different plants. The point of addition is of no consequence so long as complete solution of the chromate in the circulating water is assured. Under normal conditions the amount of chromate needed per month as makeup is about 100 lb. at a plant operating three 970-hp. Coopers.

At the present time chromated water is being used at only one of the 20 booster stations, but plans are being made for extending its use to all the stations.

Chromate is now being added to the water which is being sprayed over coils in several of the towers, to protect, if possible, the coils from further external corrosion. When the chromate was first added the consumption was very high, but it has gradually decreased to a fraction of the initial amount. This was, no doubt, due to oxidation of ferrous iron in the scale and organic matter, such as moss, in the basins. It is still too early to say how much the life of old coils can be extended by this treatment, but if new coils were sprayed with chromated water it seems fair to assume that the formation of the ordinary thick, spongy rust would be greatly retarded if not prevented altogether.

Since this paper is intended primarily as a chronical of observations of tests, no statement of the theories involved will be given. There are now available several excellent books and innumerable articles in which the theories of corrosion are covered in great detail. All the books and many of the articles mention the inhibiting effect of dichromates on corrosion. This inhibiting effect has been known for at least 20 years.[3] F. N. Speller, in his recent book[4] recommends the use of such inhibitors in circulating water systems, but no example of such use has come to our attention.

OF all the factors which are conceded to exert an influence on corrosion the following are believed to be those of most importance in underwater corrosion in case of neutral or slightly alkaline water and in the absence of any agent tending to prevent corrosion: (1) Temperature; (2) oxygen concentration; (3) agitation; (4) mechanical strains in the iron, and (5) the presence in contact with the iron of metal or alloys electrically negative to iron. Broadly speaking, an increase in any of these items tends to increase corrosion. Thus, in case of water-cooled Cooper piston rods, the conditions for rapid corrosion are as nearly ideal as it is possible to imagine.

The action by which inhibitors, or passivifiers, as they are sometimes called, retard or prevent corrosion is not well understood. That some change takes place at the surface of the metal is proven beyond question, but the nature of this change can not be observed even under microscopic examination. A specimen which has been immersed for some time in a strong solution of chromate remains passive to corrosion for a considerable time after being removed from the solution. This tendency evidently explains why no corrosion occurs between periods of normal strength of solution in the circulating systems.

All steam from the boiler plants operated in connection with the gasoline extraction plants is condensed, and the condensate returned to the boilers, the makeup being secured from evaporators. The evaporators are also used to produce the condensed water used as makeup in the plant circulating water system. The corrosive effect of condensed water in the boilers is overcome

[2] U. R. Evans: Corrosion of Metals, 1st ed. (1924) 170.

[3] A. S. Cushman and H. A. Gardner: op. cit. 112.

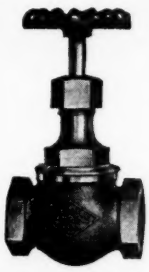

Fig. 106

Screwed, Jenkins Standard Bronze Globe Valve

Fig. 325

Screwed, Jenkins Standard Iron Body Gate Valve

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P. G. Weidner, superintendent of gas plants for the Midwest Refining Co.; A. C. Andrews, superintendent of the Salt Creek plant; E. S. Murray, D. C. Harman and W. S. Hanna contributed ideas of value in solving the problem and assisted materially in establishing the proper conditions for the use of chromate and dichromate.

R. L. Hamilton did considerable laboratory testing during March and April, 1924, on the use of silicate and dichromate as inhibitors of corrosion and supervised the first test at one of the booster stations.

[4]F. N. Speller: Corrosion—Causes and Prevention. 1st ed. (1926) 354.

Oil Loans Safer Than Any Others, Tulsa Banker Declares

CLEVELAND, Jan. 22

OIL loans are safer than any other kind, R. P. Brewster, chairman of the board, First National Bank of Tulsa, declared in a paper he prepared for reading before the recent meeting of the Montana chapter of the Rocky Mountain Oil & Gas Association at Great Falls, Mont. He described methods of financing the oil industry.

Mr. Brewster in his preamble said he always resented calling the oil industry the "oil game." He said there was an oil game but that it had no standing with financial interests.

"The real oil men of the fraternity have been so busy in carrying on this great industry," he said, "that they have allowed the 'Doctor Cooks' to advertise their business. . . . A great many of the banks throughout the producing oil country are paying for the sin of financing the oil game and not the oil business."

"THERE are three kinds of credit that can be extended that are unquestionably safe when properly made," Mr. Brewster wrote in taking up real oil country banking. "First, loans on storage, both of crude and refined products; second, production loans adaptable for commercial banks which pay out in 10 to 12 months; third, production loans for trust or investment companies which pay out over a period of from two to two and one-half years.

"No better loans can be made than those secured by storage of petroleum products, or loans made on producing properties, if they are properly made. We handle a great many loans here on storage, both of crude and of refined products. In every instance we make a personal inspection, satisfy ourselves as to the gravity of the crude and the quality of the refined products; take a mortgage on it to a trustee, insure it against fire and tornado, requiring ample margin; and we find that such loans are as satisfactory as any we have in our note case, retiring themselves seasonably, and never in a single instance have we had the slightest degree of trouble in their liquidation.

"Loans on storage of course are very simple, corresponding largely to the loaning on agricultural products stored, such as cotton in compresses and wheat in elevators. However, the loaning on production presents a more intricate problem, and one that needs the careful study and judgment of the banker. Our method of loaning on production is as follows:

"FIRST, the applicant's statement is gone over, the value of his account to the bank, the amount of his daily balances, and the same test placed on him as we would normally place on commercial accounts. Then his property is examined by a competent oil man, taking into consideration the age of the wells, the history of the producing sand, the ability of the operator to satisfactorily and economically produce his oil, and then we make that loan on a commercial basis so that it will be self-liquidating in 10 to 12 months.

"It is for our trust company or for some private investor, in long life sands, these payments are made over a period of not to exceed three years.

"We have been uniformly successful in the liquidation of these loans, find that they bring a steady and remunerative income to the bank, and at the same time the payments coming in semi-monthly render it easier for the operator to liquidate his debt without seriously inconveniencing his finances.

"THE foregoing class of loans are unquestionably the best that can be obtained in the oil country. In order to carry on the industry, however, there must be the fullest cooperation between the oil man and his banker. The mere fact that a man is operating a property should not give him any more right to borrow money than any other depositor. A number of the losses that are made by the bankers to oil men are to drilling companies. It is manifestly unsafe as a general proposition to loan drilling operators money on bottom hole contracts, and these are uniformly turned down by us, unless the drilling contractor has assets outside of his bottom hole contracts to liquidate his debt in the event he should have trouble in completing his well or be long delayed by accident or a fishing job.

"A banker who is loaning his depositors' money is in effect a trustee for those funds, and cannot risk them on a loan of this character.

"Along the line of cooperation, the oil operator in making a statement to his banker should be very careful in his valuations. Nothing depreciates much more than a string of tools. Value of leases in unproven areas are very problematical, and it is not right for them to expect a conservative and sane banker to make loans to them on a statement that is almost wholly made up of these particular items. Oil men must realize, and do, I think, that the banker is willing and ready at all times to cooperate fully and thoroughly in helping to solve his financial problems, but at the same time he should take in mind the fact that a commercial bank must be safe in the extension of credits; because, aside from the actual loaning of money to him, they are continually boosting the industry and delivering service to him that is costing the banker real money.

"The greatest problem we, in the Mid-Continent field, have had is in the sale of the idea to eastern bankers that the oil business, being a basic and nation wide industry, is entitled and had the right to demand of them their cooperation and help. In the last four or five years more progress has been made along this line than in all the other years before. Bankers of vision from the East, at our invitation, have visited us and gotten first hand information on how we handle our business. The fact that large banks have grown up in petroleum centers, are solid and substantial in character, manned by efficient officers and backed by stable directors, has demonstrated, I think, to these eastern bankers that all oil men are not wildcatters, and that the oil men can be safely loaned to."

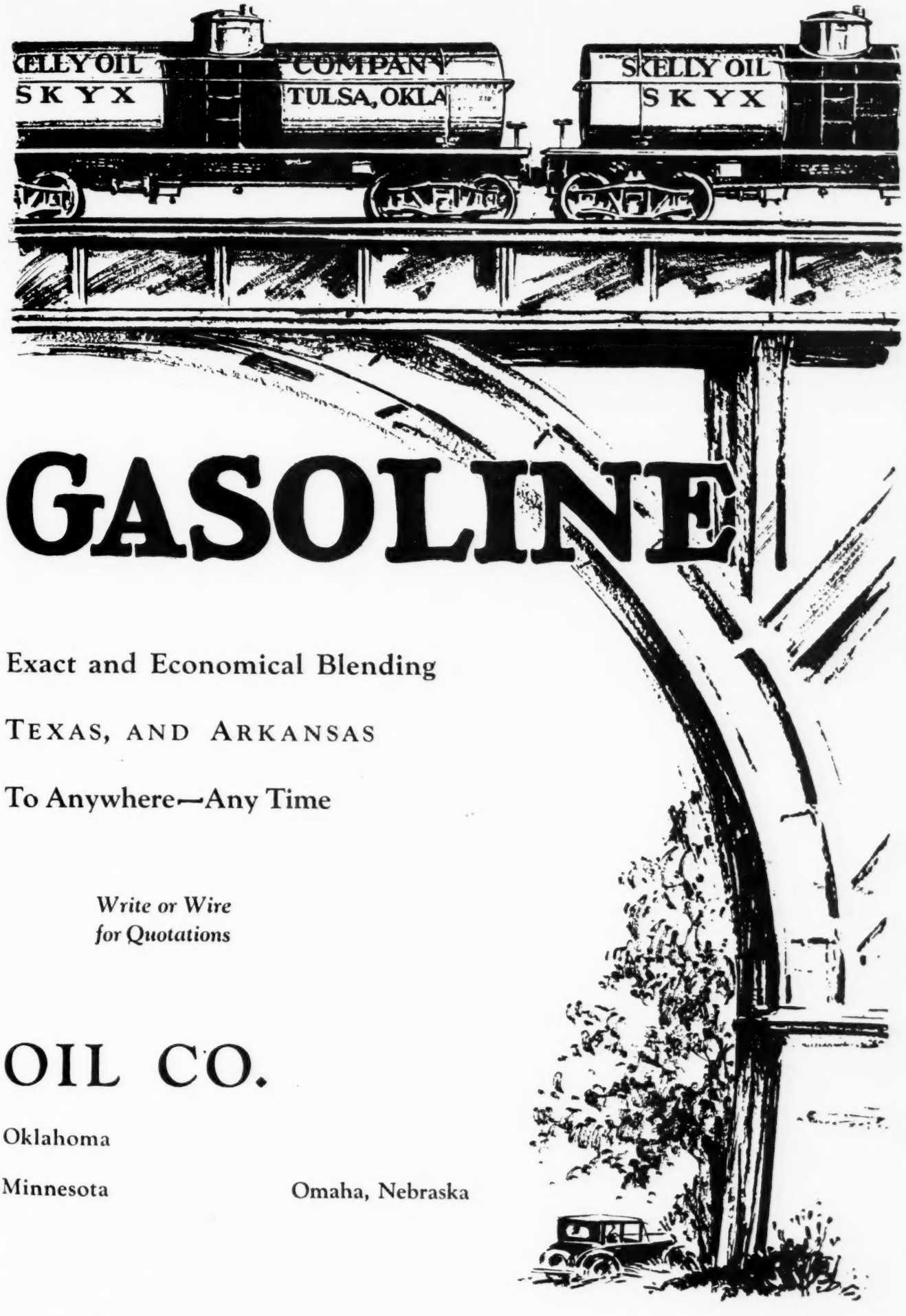
Union's Standard Plan On Employe Inventions

LOS ANGELES, Jan. 21.—A patent policy plan covering inventions of employes has been worked out by the Union Oil Co. of California and its administration placed in three members of the executive committee.

The Union will prosecute for patent useful inventions of employes, paying them a primary award of $100. If the invention is licensed to others the employe will get, additional, half the net profits on income from licensees. In case the patent is sold outright the employe will receive half the net profits resulting.

No compensation other than the first $100 will be paid the employe for use of the invention by the Union, unless greatly increased profits are enjoyed as a direct result. Then the patent administrators, with the approval of the board of directors, may make additional compensation.

An agreement embodying the foregoing patent policy will be a condition of employment hereafter, but it is optional with present employes.



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How Will Production of Oil From Coal Affect Petroleum Industry?

By Dr. Friedrich Bergius
Inventor of Bergin Process for Hydrogenation of Coal
A Lecture Delivered May 26, 1926, in Vienna
Translated by Paul Truesdell from Petroleum Zeitschrift Dec. 1, 1926 Issue

PART 2

IN view of the extraordinarily uncertain situation of individual petroleum producers, any kind of stabilization of the market has never been possible unless an arrangement for a division of the risks was worked out by the big oil companies. Through the combination of production, refining, shipping and storage in the various districts of world production and world consumption, and through the timely switching of the refineries to make those products that the market immediately requires, the petroleum companies have solved the great riddle of providing millions of barrels yearly to meet a climbing demand, under constantly increasing stability of price.

The rapid development of the automobile is a good proof of the extraordinary organizing ability of the two great oil trusts and their leaders. I believe we are indebted to the foresight of the leaders of both of the great oil companies (Shell and Standard) because they have solved both of the chief riddles of the industrial leader, namely, to serve both the consumer and the stockholder.

IN production and consumption of petroleum products United States stands in first place, by a long lead. It is, therefore, well to understand that one has to be careful in that country in proposing the question how long the earth will continue to give up its streams of oil. Very pessimistic was the opinion a few years ago when an expert suggested that in about eight years the production of the wells would be greatly decreased.

A new report that a government commission has compiled after several years' work comes to a somewhat more favorable conclusion but nevertheless says also that the oil districts, operated with the present methods, can only meet the needs of the country for relatively few years but with better production methods enough oil can be produced for many years.

As a consequence of improved and complicated production methods, however, the price of oil products must go up. This report has in view, besides, that not alone from the crude oil formed by nature shall liquid fuel be produced, but it reckons also in the greatest petroleum country of the world, with the production of motor fuel from coal.

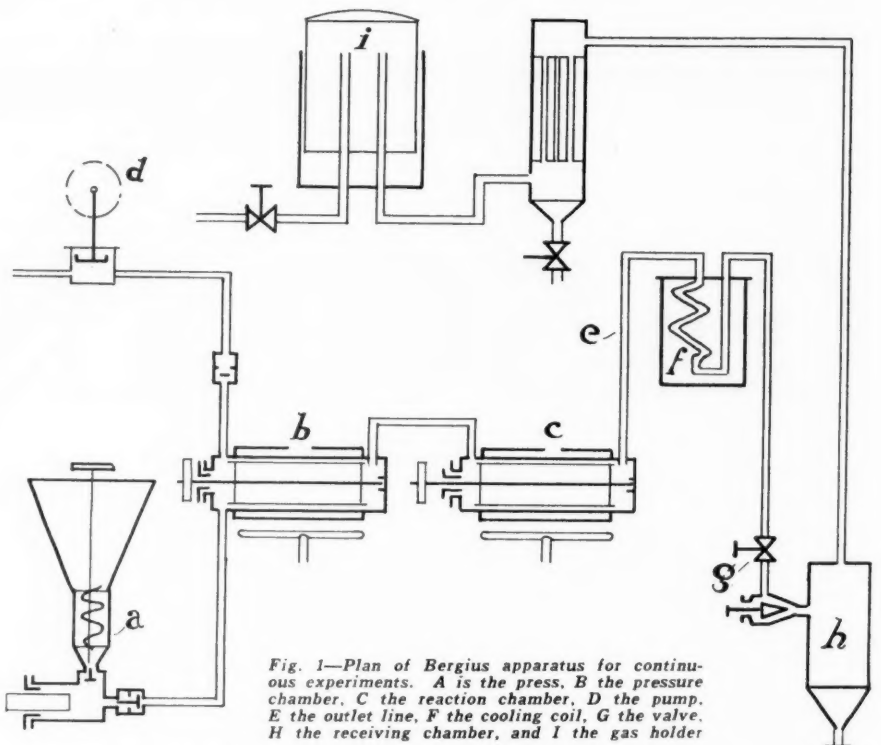

Fig. 1—Plan of Bergius apparatus for continuous experiments. A is the press, B the pressure chamber, C the reaction chamber, D the pump, E the outlet line, F the cooling coil, G the valve, H the receiving chamber, and I the gas holder

THE observation of the economic circumstances has shown that the great oil requirements of Europe today are dangerously dependent on America and Asia. This dependence must become more oppressive from year to year as the development of the automobile and use of motor equipment on the farms in Europe catches up with more fortunate America. So it is self evident that the question of a substitute for natural crude oil has become one of the most important modern economic problems. The challenge has been laid before the technical men to place the production of oil on a practical, industrial, mass production basis with an assured supply of raw material.

Coal is the only raw material at hand for oil. No other chemically thinkable raw material is at once available in such quantity and geographically distributed so well that it can be considered as a source of crude oil production. Production of oil from coal may not be considered as a by-product industry.

Oil made from coal must not be considered as a by-product if it is intended to supply the needs of great countries for oil.

The great magnitude of consumption makes it necessary that such an oil producing process must have oil as its single or at least its chief product. The manufacture of coke out of coal, for example, furnishes considerable quantities of liquid fuel, benzol and diesel oil, when considered as a coking process, but insignificant compared with the demand for oil.

THEREFORE, the processes that would synthesize oil out of water gas have a poor prospect. They demand very much coal because, the natural hydrogen in the coal substance is first destroyed in the coking process, then the carbon is partially charged with oxygen which must be again separated with new hydrogen produced from the coal. They require further, as contact proc-

esses, pure materials. Such processes are very well adapted for and have their greatest field in the production of high grade carbon-hydrogen-oxygen compounds, such methyl alcohol and higher alcohols.

But for synthesizing oils this method appears futile, be it regarded as a high pressure process or according to a newer suggestion, be it carried out as a low pressure process. To tread the latter path it is still less promising. By practical comparison, it can be shown immediately in this case with convincing clearness how exceedingly impractical low pressure processes are in handling great quantities of gas.

SIMILARLY is the modern industry of low temperature tar production to be observed from the standpoint of oil manufacture. However important many modern low temperature processes for the handling of various grades of coal may become when a market for great quantities of semi-coke can be found, the fact remains from the oil standpoint that only 5 to 10 per cent of the coal is formed into tar and that, in consequence of the not very favorable chemical properties of these tars, only about half of the quantity of tar produced can be marketed as oil.

If the oil problem is to be solved through a conversion process, it must be required of that process that large quantities of oil can be made from reasonably small amounts of coal and that the adaptability of the process is not closely limited to certain grades of coal that may be hard to get. By the nature of oil as a commodity of mass consumption it must be required also of such a process that besides the coal, no appreciable quantities of other materials are required that would narrow its application to quantity production.

As I pursued this problem for about 13 years, it appeared to me from earlier research on the chemical nature of coal, only one way of working was practical, namely, the addition of hydrogen to the coal. To speak in a primitive chemical way, from observation of the quantitative atomic composition, the chemically related substances, oil and coal, differ from each other in that oil is a hydrocarbon much richer in hydrogen than coal. If it could be accomplished in a rational way to add hydrogen to coal then it could be expected that oil-like substances would be formed and my hypothesis that coal is to some extent a homogeneous chemical compound would be proved correct.

The French chemist Berthelot had shown 50 years earlier that with reduction methods that are possible to use in organic synthesis with hydriodic acid, oily substances could be recovered from the coal and the great German chemist Emil Fischer, now dead, had at about the same time in our first experiments, pointed the way for German research in coal hydrogenation. The chemists had had up to that time a certain aversion against any working with coal that could not be carried out according to the rules of the organic laboratories, crystallization, distillation, melting and dissolving and reaction in the derivatives from which the structural chemist according to the old methods determined the atomic composition. This adverse and lazy attitude was responsible for the fact that the engineer took in hand the control of coal and developed its fuel value while the chemist engaged himself only with the chemically easier to obtain distillation products of coal and coking processes whose chemical nature he brought to the highest refinement in dye chemistry.

The laboratory that I had established 15 years ago in Hanover served chiefly for research on the reactions that occurred under high pressure and it was my chief aim, after theoretical work on the origin of coal had given me a picture of the molecules of natural coal, to carry out experiments to learn whether it was possible to impregnate the coal molecules with gaseous hydrogen, the commercial production of which had become possible at that time.

From these studies of the nature of coal it was indicated that for this impregnation, temperatures would be required at which coal begins to decompose. The first experiments in this direction showed that the expectation was fulfilled. The coal took the hydrogen greedily at pressures above 100 atmospheres and temperatures in the neighborhood of 400 C. and changed itself thereby for the most part into a liquid which resembled petroleum.

These first laboratory experiments on the smallest scale were naturally but a relatively unimportant first step on what was to prove a right thorny path to the development of a technical process for the conversion of coal into oil.

IT appeared presently that the working conditions must be changed for various coals and that thousands of laboratory experiments were necessary to get a fairly clear picture of the reactive ability of various kinds of coal, of the variability of the various products and the most favorable reaction conditions. Much harder, however, were the attempts to give the engineers an idea of the mechanical equipment for the process. The engineers had had experience from Bosch by reason of the experiments of Haber's successfully built up ammonia industry, and it had been proved that working under high pressures on a large industrial scale is possible. The steel industry had learned to build high pressure containers of large dimensions, but the coal liquefying problem offered new and important difficulties.

The ammonia synthesis works only with highly compressed gases whose movement through the apparatus is relatively simple. With coal liquefaction, hydrogen reacts with solid coal for the formation of oil and gas and all of the substances taking part in the reaction must, during the process, be kept in constant motion. Apparatus must be built in which a continuous stream of these diverse materials can be held at exactly constant temperatures and methods must be developed whereby the solid coal in a uniform stream would be delivered into the high pressure chamber while in the chamber itself stirring elements must be provided to maintain continuous mixing of the reacting substances.

THE reaction temperature that is not far from 500 C. requires particular care in the construction of the apparatus because the tensile strength of iron at these temperatures begins to lessen perceptibly. Therefore, new heating methods had to be found that while absolutely preventing overheating of the pressure apparatus, would at the same time make possible rapid warming and cooling.

The laboratory experiments for study of the chemical reactions and their particular conditions with the most different kinds of coal could be carried out in comparatively simple steel bombs for whose exact observation a comprehensive staff of trained assistants was necessary.

In order to judge of the technical operating possibility indicated by the comparative experiments, it was obviously necessary to have continuous operation. The diagram of such an apparatus is shown herewith, Fig. 1. This apparatus which in the Rheinau works carried out many experiments, processes one ton of coal in 24 hours and serves to give an accurate study of the character of the different coals in continuous operation.

In order to make it possible to pump the coal, it is mixed with a part of the oily product to a paste and by means of a suitable press is led through two containers in series, of which the first serves for heating up and the second for the reaction.

THE hydrogen is introduced into the heating chamber under the working pressure. The products of the reaction together are drawn out of the apparatus through an outlet pipe provided with an ejecting device, led to a cooling coil and released from the high pressure. In another chamber the liquid and solid bodies separate themselves from the gas. The oils with their content of inorganic coal substance and certain unchanged parts of the coal, go to further processing while the gases are collected in the gasometer and, as I will later show, are used further.

Simultaneously with the work in the laboratories and the semi-technical methods, many unsuccessful attempts led finally to the development of large size apparatus in which the process could be carried out on a large scale. The most important conditions for this apparatus were the assurance of exact

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heating, good heat economy, and operating safety against leaks and danger of explosion. Naturally I cannot here go into the various steps of development and the details of this apparatus but can only say that after years of labor a form of construction has been developed and proved that meets the required conditions. The Rheinau works of the German Bergin-Aktiengesellschaft for Coal and Petroleum Chemistry owns such an apparatus of a size that does not need to be increased for the next industrial installation.

Magnolia Crude Runs For December

HOUSTON, Jan. 24.—Magnolia Petroleum Company, pipeline department, announces from Dallas headquarters the following crude oil runs for December, which are shown in comparison with November:

	November	December
Hewitt-Graham	148,591.12	148,263.86
Healdton	208,353.75	197,635.87
Cushing	171,631.01	206,083.47
Yale	68,986.76	68,367.89
Cement	22,376.42	25,601.71
Duncan	48,545.54	47,674.04
Augusta	39,255.61	41,830.12
Walters-Beaver Creek	7,911.81	8,583.84
Burbank	63,574.01	55,112.93
Wewoka	511,248.69	658,308.72
Bristow	.....	.....
Total Okla.-Kans.	1,290,474.72	1,457,462.45
Archer	83,074.02	83,072.06
Burkburnett	74,432.97	78,439.13
Coleman	.....	.....
Comanche	22,588.38	22,600.27
Electra	104,022.68	105,049.55
Corsicana Heavy	9,036.23	7,711.33
Corsicana Light	15,378.22	15,536.72
Henrietta	5,053.97	5,361.17
Iatan	12,797.87	1,412.75
Luling	438,877.48	455,502.80
Lytton Springs	63,016.46	59,935.24
Mexia-Wortham	46,108.22	49,700.73
Mirando	139,092.78	135,381.64
Olden	16,892.95	16,098.51
Panhandle	281,914.46	264,028.70
Panola	186.49	356.20
Stephens	11,566.93	12,273.43
Thrall	1,650.73	1,683.84
Gulf Coast	24,913.69	25,791.58
Total Texas	1,350,604.53	1,339,935.65
Haynesville	4,329.13	3,584.97
Bull Bayou	34,629.22	34,129.68
Cotton Valley	22,605.07	26,689.61
Pine Island	32,018.34	35,728.66
Total Louisiana	93,581.76	100,132.92
El Dorado Light	39,393.04	37,413.19
East El Dorado	2,016.20	2,350.93
Smackover	115,424.07	136,535.50
Total Arkansas	156,833.31	176,299.62
GRAND TOTAL	2,891,494.32	3,073,830.64

OKLAHOMA—KANSAS

Report for December		Daily Average
Runs	1,457,463.00	47,015.00
Shipments	1,423,403.00	45,916.00
Stocks	3,202,015.00	

TEXAS

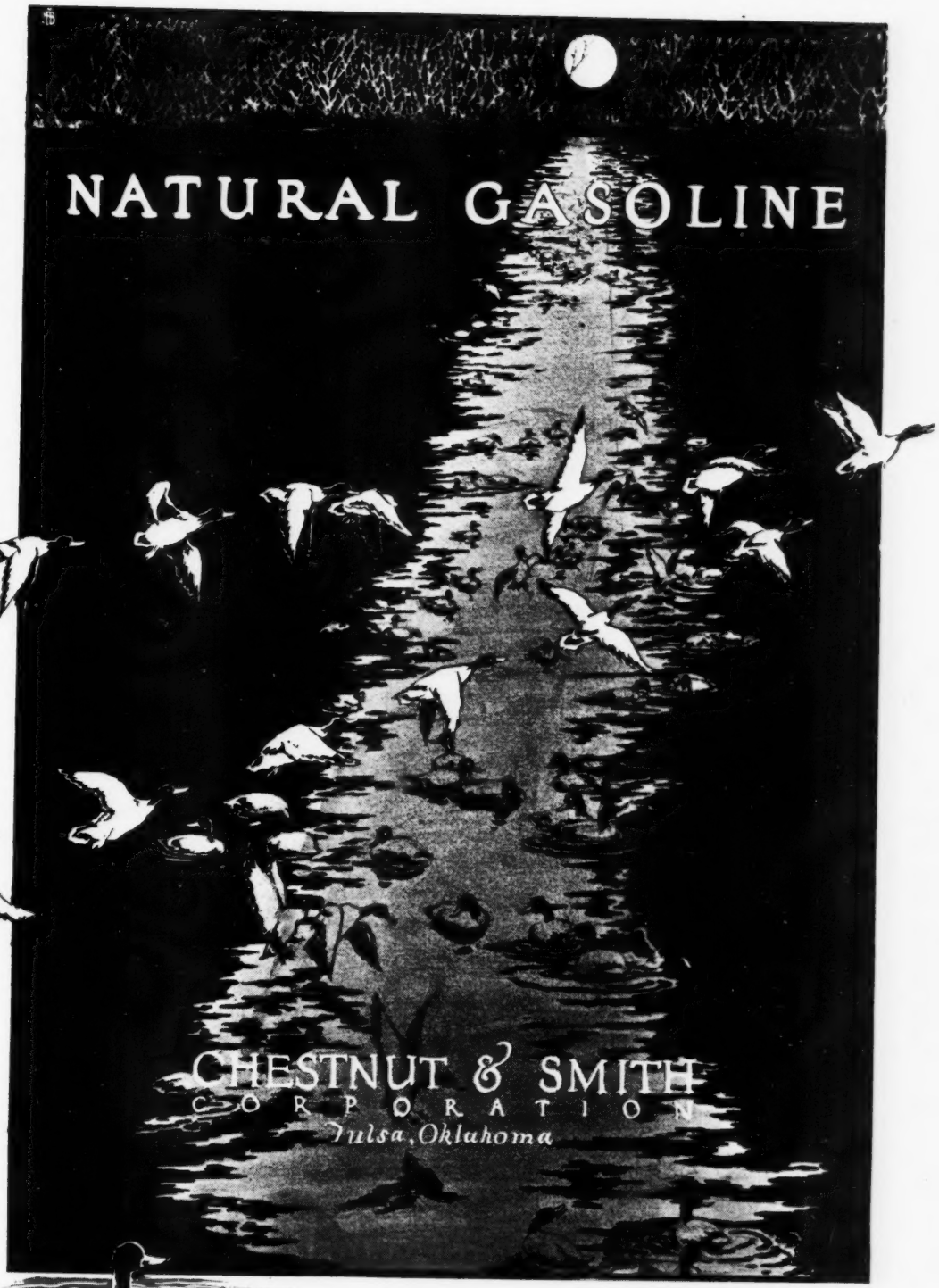
Wichita, Wilbarger, Archer	Runs	293,600	9,471
	Shipments	314,211	10,136
Petrolia	Runs	5,391	173
	Shipments	5,391	173
Eastland, Stephens	Runs	50,972	1,644
	Shipments	376,722	12,152

TOTAL STOCKS 1,232,078.00 North Cent. Texas

FLAGLER, COL.—Pearl Lord has purchased the bulk plant of Jewel Oil Co., Inc. here. Mr. Lord has been operating this plant in connection with his service station for the past two years.

SLEEPY EYE, MINN.—Brown County Co-Operative Oil Association has just completed a service station here, which has an office and basement, according to Ed McGowan, secretary-treasurer.

The population of the feeding grounds of wild life varies with the season. At times only an occasional lone bird, and again, countless numbers. These feeding grounds are known sources of food supply to the migrating flocks.



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Our Industry—A Page of Facts and Observations

National Petroleum News

By Paul Wagner

CLAUD L. WITHERSPOON, individual operator and president of the Witherspoon Oil Co., San Antonio, was one of the first three oil scouts in the state of Texas. He was a scout in the days of shallow oil development at Corsicana, in 1896, nearly 25 years before the deep Woodbine producing horizon of the Powell field was even dreamed about. He was a scout for Staley-Barnsley in the early Corsicana development but was not contented for long to work for somebody else. He leased town lots for himself and got others to drill them, retaining a royalty interest.

That gave Witherspoon his start as a drilling contractor and producer. He drilled 104 shallow wells in one of the old Corsicana district pools in 1905 and 101 were producers. He has drilled wildcat wells in most of the producing areas of Texas, except the region west of San Angelo and the Panhandle. Witherspoon and his family together own nearly all the stock of the Witherspoon Oil Co., which is capitalized at $1,500,000.

* * *

GEORGE SAWTELLE is one vice president and general manager of an oil operating company who conducts its affairs from the field. Others can sign checks and take care of the office routine, but Sawtelle personally supervises the geological work, acquisition of leases and drilling of wells. In the stress of Powell and Wortham developments, Sawtelle spent most of his time in the field for the Kirby Petroleum Co., making only occasional trips to the general office at Houston. Now that his company is entering the west Texas area, Sawtelle has located himself at San Angelo. He will keep closely in touch with the several departments charged with the detail of Kirby operations and has moved his chief geologist, C. P. Butcher, to San Angelo with him.

* * *

LANDON McCOLLISTER, engineering graduate of the University of Oklahoma at Norman, who has been representing the Guarantee Liquid Measure Co., making his headquarters at Wichita Falls, has been transferred to Houston. His territory hereafter will extend south of a line drawn from Midland, Texas, on the west, past Waco to Beaumont, on the east.

* * *

N. P. ISENBERGER and Floyd Reynolds, of the geological organization of the Amerada Petroleum Corp., have been transferred from the Amarillo district to San Angelo, which will be the base for exploratory work to be conducted in the west Texas region. Amerada offices are in the Rust building.

HOWARD N. COLE

HOWARD N. COLE, vice-president of the Pure Oil Co. at Tulsa, is an outstanding figure in the operating branch of the petroleum industry in the Mid-Continent. His connection with the Pure dates from 1917 when that company (then known as Ohio Cities Gas Co.) entered the Mid-Continent territory through purchase of the Gunsburg & Forman producing properties and the International-Ardmore refineries. Mr. Cole was previously in charge of Twin State Oil Co. operations in Oklahoma, but left that subsidiary of the Sun Oil Co. to take charge of the Pure's development and producing activities in the Mid-Continent. He was made a vice-president of the Pure several years ago.

* * *

GEOLOGY and paleontology generally go hand in hand in the petroleum industry. In the Houston territory, however, they are likewise linked in the matrimonial field. The latest example is the recently announced marriage at the home of the bride's parents in Holdenville, Okla., of John Miller, paleontologist for The Texas Co., at Houston, and Miss Emma Jane Coffman, laboratory assistant to Miss Alva C. Ellisor, paleontologist of the Humble Oil & Refining Co. Miss Coffman is a graduate of the University of Oklahoma at Norman. Mr. Miller came to Houston about a year ago to take the position vacated in The Texas Co. by Miss Hedwig T. Knicker, who went to San Angelo as paleontologist for Ricker & Dodson and treasurer of El Capitan Oil Co. Nearly a year ago, Miss Laura Lee Lane, paleontologist in the organization of Alexander Deussen, vice-president of the Marland Oil Co. of Texas at Houston, became the bride of John Weinzerl, geologist, with the North American Exploration Co. More than two years ago, Miss Esther Richards, then paleontologist of the Rio Bravo Oil Co., was married to Paul L. Applin, geologist, who at that time was with the Rior Bavo but who later joined the J. S. Cosden organization at Fort Worth.

* * *

SOUTHERN CRUDE OIL PURCHASING CO., arm of the Pan American group, has moved in rotary tools for two test wells to be drilled on the acreage block where the Westbrook et al interests recently completed the No. 1 Hendricks discovery of Winkler county, Texas. Both of the new wells, numbered A-2 and A-3, are located in sec. 33, block B-5. Their drilling will be watched closely because of the virtual innovation to which the use of rotary tools in this part of Texas amounts.

With the exception of one hole put down in Reagan county by M. D. Bryant, drilling contractor, at the time of main development at Big Lake, field work in the region west of San Angelo has been entirely with cable tool equipment. Southern Crude Oil Purchasing Co. took over the Hendricks well and adjoining acreage from the Westbrook et al interests soon after the last mentioned wildcatters had recently completed it for initial production of about 135 barrels daily at total depth of 3004 feet.

* * *

DE. LOUNSBERRY, until recently connected with the Midwest Exploration Co., at Abilene, Texas, has joined the southwestern organization of the Phillips Petroleum Co., with Fort Worth headquarters. Lounsberry will have charge of all Texas geological work except in the Panhandle district. He was a recent visitor to San Angelo, accompanied by J. K. Knox, chief Phillips geologist, of Bartlesville, and Walter Ritterbush of Fort Worth, head of Phillips' land department in Texas territory outside the Panhandle. H. K. Boysen has been transferred to the Phillips' land department office at San Angelo, where he will work with Paul S. Schlosser, district geologist.

* * *

DELMAR OIL CO., subsidiary of the Indian Territory Illuminating Oil Co., of Bartlesville, has opened West Texas land and geological offices at San Angelo, in the Allen building. F. E. Lewis, who had previously represented the Delmar's land and geological departments in west Texas work and W. F. Clark, of the Bartlesville land department, are in charge.

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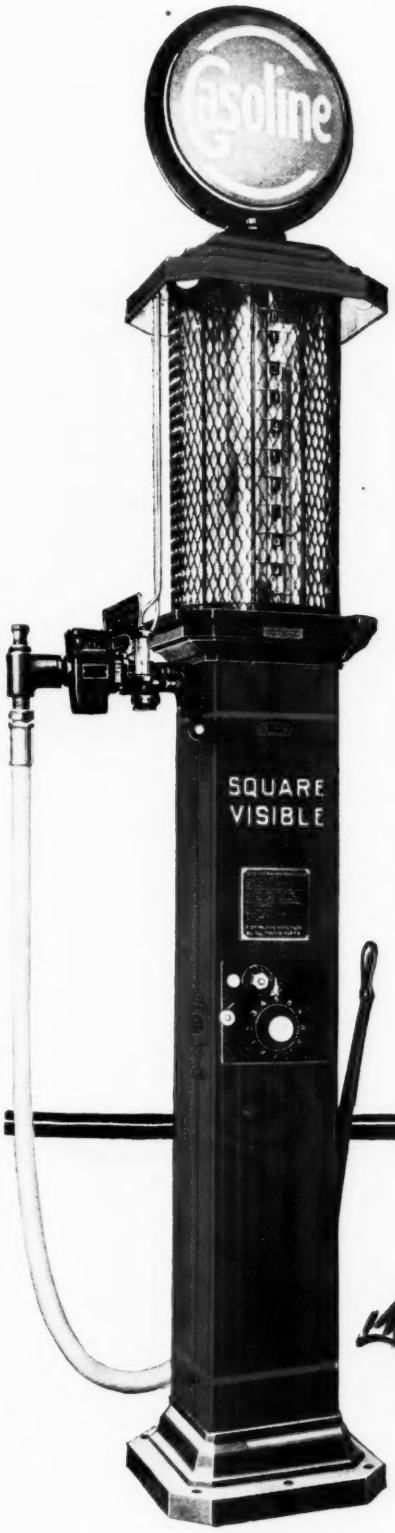

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Visiting Around the Refineries

By Paul Truesdell

National Petroleum News

Lists Cracking Installations on Pacific Coast

BERNARD O'CONNOR, manager of the refining department of the California Petroleum Corp., Los Angeles, gave an interesting survey of the refining situation on the Pacific coast in a talk before the recent annual convention of the Rocky Mountain Oil & Gas Association at Great Falls, Mont.

The most interesting point in it was the statement that 38,000 barrels a day of cracked gasoline can be expected from the California refineries within a short time. Mr. O'Connor, who has recently completed the survey of California refineries for the purpose of studying the cracking situation, adaptability and merits of various processes and so on for his company, had first hand information on the subject. He lists the refining companies who have, are installing or will shortly install cracking plants as follows, in terms of cracked gasoline per day they will produce:

	Barrels
Standard of California, installed and installing,	12,000
Union Oil Co., installed and installing,	3,375
Associated Oil Co., not installed, estimated,	3,000
Richfield Oil Co., installed or installing	4,500
California Petroleum Corp., not installed	1,500
Pan American Petroleum Corp., installed	1,500
General Petroleum Corp., not installed, estimated,	1,500
Miscellaneous, not installed, estimated,	1,500
Total	38,475

Of this total, cracking capacity for 30,975 barrels of gasoline a day is already installed or under construction which will be finished by July 1, Mr. O'Connor says.

A New Concrete Insulating Material

REFINERS will be interested in a new type of "cell concrete" that has been developed in Sweden and which is described in the January Industrial Bulletin put out by Arthur D. Little, Inc., Boston. The bulletin states that the new material is a light weight concrete which can be made in weights from 18 to 75 pounds to the cubic foot according to the requirements.

It is made by mixing a tough foam into a mortar of cement, sand and water and is permeated with small separate air bubbles. According to the bulletin, tests of the material made for fireproof quality and heat transmission showed that in an hour, a temperature of 1380 F. on one side of a slab six centimeters about two and a half inches thick, resulted in a temperature of only 130 on the other side of the slab. That makes it look interesting as a refinery construction material, both from a fireproof and from an insulation standpoint.

More About Color in Gasoline

IT seems likely now that the pendulum of public sentiment concerning gasoline may swing from the extreme of looking doubtfully at any motor fuel that is not clear water white, to the extreme of demanding that it be some other color, red or blue or green.

Of course, it hasn't swung anywhere near to that point yet but it is surprising how many colored gasolines are now being offered to the motorist. Colors ranging from orange to red seem to predominate but there are a few green and blue fuels being offered. It seems likely that orange, yellow or red may become associated in the public mind with anti-knock value so that the motorist will doubt the anti-knock value of any gasoline unless it is colored.

The increasingly wide distribution of Ethyl gasoline, which is a reddish orange, and is known as an anti-knock fuel, of course, has much to do with this; and other companies putting out anti-knock fuels of their own in many cases are coloring them similarly to Ethyl gasoline. The latest company to put out a red anti-knock fuel is the California Petroleum Co. on the Pacific Coast.

At least one company is putting out a straight cracked motor fuel of high anti-knock value, colored a brilliant green. The idea that color denotes anti-knock value may become as firmly fixed in the public mind as the old idea was that water white color denotes all that is desirable.

A Real Refiner to Head Refining Division

WE think the nominating committee of the A.I.M.E. did a wise and proper thing in proposing Walter Miller, vice president of the Marland Refining Co. as vice chairman of the petroleum division to head the refinery engineering branch during the coming year. Mr. Miller has become an outstanding figure in the refining industry and he is known the country over. Among eastern refining men his acquaintance dates back to his long years of work with the Tide Water Oil Co. and he is known in the west through his achievements with Cosden & Co. and later with the company whose refining operations he now guides.

The remarkable paper Mr. Miller read at the recent Institute meeting in Tulsa on the refining of Panhandle crude showed Mr. Miller's knowledge of the subject, his ability to give out that knowledge in a lucid manner and above all, his attitude of willingness to share with the industry generally knowledge developed in the operations at his plant.

Benzol and Other Aromatics from Natural Gas

DR. H. G. SHATWELL, writing in Naft, the house organ of the Anglo-Persian Oil Co. of England, states that recent research work has shown that it is possible to reverse the usual practice of cracking heavy oils and to crack natural gas to obtain aromatic compounds.

He says "natural gas is passed through a highly heated tube, a portion becomes converted into liquid from which may be extracted benzol, toluol and other aromatic hydrocarbons. This discovery is of the utmost importance."

The Answer Discovered

ON this page in the Dec. 15 issue, after relating the numerous activities of Colonel George A. Burrell of Pittsburgh, we closed the paragraph by wondering how the colonel spends the rest of his time.

Now we know. In Wilmington, Del., the other day, Dr. Gustav Egloff, who was an expert witness for the Universal Oil Products Co. in its suit against the Skelly Oil Co., furnished the answer.

The colonel plays golf. Dr. Egloff says he plays a good game too, going around in the 70's when he is in particularly good form. Colonel Burrell was also an expert witness for Dubbs in the same suit. Next month he will appear for the Phillips Petroleum Co. in the suit brought against it by the Carbide & Carbon Chemical Co. on the stabilizing method for natural gasoline.

Ready Now!

OIL PRICE HANDBOOK For 1926

IF some one asked you—

1 - Tank wagon price of gasoline in your territory April 8, 1926?
2 - Refinery market on gasoline or kerosene on February 3, 1926?
3 - Price of Mid-Continent crude Jan. 29, 1926?
4 - N. Y. Export or Gulf Export markets for May 1926?

Could you answer in 10 seconds?

You could—if you had the 1926 OIL PRICE HANDBOOK and Refinery Directory on your desk.

This is the third edition of the OIL PRICE HANDBOOK—the most complete compilation of prices and statistics on the oil industry for the year 1926 ever published in one volume for quick and easy reference.

Requests for the 1926 OIL PRICE HANDBOOK will be filled in the order received. We have a large number of standing orders for a copy "the minute it is off the press," and new orders are coming in daily.

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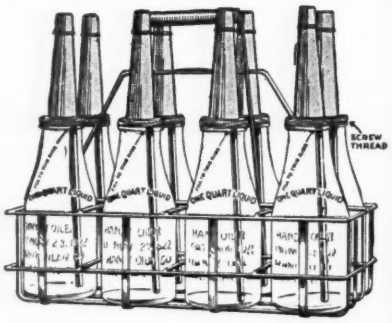

Increase Your Profit

OIL companies have spent thousands of dollars obtaining desirable locations for their stations, and have spent enormous sums of money displaying their gasoline signs, but have overlooked the most profit-making product they handle, lubricating oil.

Display your lubricating oil in Handy Oilers placed on Handy Oiler's display stand and increase the most profitable part of your business, the sale of lubricating oil.

Write us for prices on this equipment.

Manufactured by

THE HANDY OILER CO.

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Tank and Fitting

OUTFITS for

Single Pump Installations

OUTFIT No. 280C—

280 gallon 3-16″x42″x49″ Underground Tank; one 2″x30″ fill pipe with C. I. Lock Cap; one double bushing; one gauge stick.

OUTFIT No. 5C—

5 Bbl. No. 14 ga. x36″x63″ Galvanized Tank. Same fittings as above.

OUTFIT No. 550C—

550 gallon 3-16″x48″x73″ Underground Tank. Same fittings as above.

OUTFIT No. 10C—

10 Bbl. No. 14 ga. x42″x93″ Galvanized Tank. Same fittings as above.

Prices Quoted F. O. B. Indianapolis

Above tanks are carefully made, are welded, tested to Underwriters Specifications and carry Underwriters Label. We supply many leading gasoline and oil jobbers. Write for all price lists.

EMERSON - SCHEURING TANK CO.

Indianapolis, Ind.

Here & There

National Petroleum News

PALMER HUGHES

Palmer Hughes, sales manager, Simms Oil Co., Dallas, Texas, who has been calling on eastern and central western jobbers in the last week or two, reports that heavy snows which have blanketed the northern states of that region since Christmas have caused gasoline to pipe up in jobbers' storage. Many jobbers are hard put to handle their gasoline receipts and many cars of gasoline are standing on railroad sidings. Mr. Hughes used to live in Minneapolis where the temperature gets low in winter. He had forgot about that when he left Dallas on this trip, so his 13-year-old fur coat was still in cold storage in Dallas while he hustled against the zero blasts of Chicago, Cleveland and other places.

* * *

Arthur J. Houghton, sales manager of the Wilshire Oil Co., Los Angeles, died at his Los Angeles home January 3. He had been in bad health for several months.

Junior Here and There

Mr. and Mrs. E. L. Mott, 3730 Summitt Ave., Kansas City, are parents of a seven-pound boy born Dec. 30, 1926. Mr. Mott is Kansas City representative of the Deepwater Oil Refineries, Inc., Houston.

* * *

O. J. Tuttle, salesmanager for the Empire Refineries, Inc., and Mrs. Tuttle, announce the birth of a son, who has been named Oscar J. Tuttle, Jr.

President Jacques Vinmont of the California Petroleum Corp., accompanied by several other officials of the corporation, headquarters in Los Angeles, are spending about 10 days of January touring company property on the West coast, gathering information to be used as a basis for planning improvements and extensions during the coming year.

* * *

F. J. Ambrose, of the Magnolia Petroleum Co., Gallup, N. M., returned from a successful deer hunt on Nov. 16. He reports plenty of deer and turkey in New Mexico. Mr. Ambrose also reports that a member of an adjoining party shot a 600 pound bear with a shotgun from a tree.

* * *

Howard Monks, foreign representative Parkersburg Rig & Reel Co., Parkersburg, W. Va., who recently returned from South American oil fields, visited friends and relatives in Cleveland a few days recently before resuming his work abroad.

* * *

J. H. Campbell, Tulsa lease agent, who has been in New Mexico, was in Chicago before Christmas and went to visit his home in Bowogiac, Mich., for the holiday. Mr. Campbell returned to Tulsa Dec. 27.

* * *

Frank J. Hogan, chief counsel for Edward L. Doheny, of Washington, attended the dinner in Los Angeles, Jan. 10 in honor of Mr. Doheny. Mr. Hogan plans to return to Washington before the end of January.

* * *

C. F. Cabaniss, salesman of the American Petroleum Products Co., Chicago, was at South Bend, Ind., for New Year's.

* * *

W. Wiley Rice, Barnsdall Refining Co., Chicago, attended the South Dakota jobbers meeting at Sioux Falls Jan. 5.

* * *

A. C. Breuch, an official of the Pennsylvania Oil Co., Madison, Wis., is passing several months' vacation in California.

* * *

J. E. Smith, of the J. E. Smith Oil Co., Washington Court House, O., and Mrs. Smith, were in chicago recently.

* * *

H. J. Scott, sales manager of the Transcontinental Oil Co. at Tulsa, was in Los Angeles for the holidays.

* * *

George Baldwin of the Fuel Oil Co., Detroit, was in Chicago Dec. 28.

New Equipment for Plant Improvement

Personal Notes of the Manufacturers

National Petroleum News

The Butler Manufacturing Co., Kansas City, recently celebrated the 25th anniversary of the business with a party at the Central Junior high school in Kansas City.

Charles R. Butler, president of the company was chairman. Mr. Butler, with E. E. Norquist, first vice president and general manager and Victor Norquist, plant engineer, received 25-year service buttons of gold set with small diamonds. The buttons were presented by Lorraine Norquist, seven year old daughter of Mr. and Mrs. E. E. Norquist.

Five-year, 10-year, 15-year, 20-year and 25-year service buttons were presented to officers and employees. Other officers recently elected by the directors are: C. C. Crouch, vice president and manager of the Minneapolis division; Roy S. Kemp, vice president and credit manager; William A. Knapp, secretary; Oscar D. Nelson, treasurer; F. A. Rufi, assistant to the first vice president and W. C. Glover, manager of the Glover division which manufactures equipment for the cleaning and dying industry. The fourteenth annual salesmen's school ended recently with a banquet in the President Hotel, Kansas City, at which 110 men were present.

* * *

An article entitled "Progress in Petroleum Refining," is carried on page 72 of the November of Oxy-Acetylene Tips, magazine of the Linde Air Products Co. The article, which is illustrated with pictures of refinery equipment, particularly welded equipment, tells of the part acetylene welding plays in construction of the modern refinery.

* * *

Heat Engineering, the magazine put out by the Power Specialty Co., New York, in its December issue carries a photograph of a combined Foster pipe still and steam superheater which is in service at the plant of the Bolene Refining Co., Enid, Okla.

* * *

The Willams Oil-O-Matic Heating Corp., Bloomington, Ill., has just finished a six-day convention of the sales force. Eighty-one men attended. C. U. Williams, president of the corporation predicted that sales in 1927 will be three times as great as sales during 1926.

* * *

The Pyrometer Instrument Co., New York, has sent out a circular letter describing its new "total radiation" type of pyrometer, said to contain a number of novel features of technical interest and of value in heat treatment processes.

The Austin Co., Cleveland, engineers and builders, announces that it has been awarded the contract for the first new unit of the Parkersburg Rig & Reel Co.'s plant. This will be a building 242 by 125 feet in size of structural steel frame, steel sash and brick sidewall construction, to cost about $100,000. Additional new buildings to cost about $500,000 will be built as soon as the first unit is completed on the new site opposite the company's present plant in Parkersburg, it is announced.

* * *

The St. Louis Can Co., St. Louis is putting out a new style of 5-gallon oil container called the Pour-Ezee drum. It is a circular container that pours from a spout on the side tipped. The drum, which lies on its side, has two lugs or handles on the sides and is counterbalanced so that one handle supports the drum with the pouring spout upward when the drum is at rest. It is stated that 250 oil companies have adopted the new container.

* * *

Hills-McCanna Co., Chicago, has put out a booklet describing the company's power plant equipment. In addition to its line of force feed lubricators and steam specialties, a line of chemical proportioning pumps is described. These are intended for metering of water softening chemicals, boiler compounds and other chemicals that are to be fed into equipment at a predetermined rate.

* * *

Petroleum Iron Works Co., Sharon, Pa., announces that on Jan. 1 it took over the Sharon tank car plant and the Beaumont, Tex., structural steel plant of the Pennsylvania Car Co. and now the complete manufacture of Pennsylvania tank cars will be under Petroleum Iron Works Co. The two plants will be operated as the Pennsylvania Tank Car Department and the Structural Steel Department, respectively.

* * *

Evens & Howard Fire Brick Co. of St. Louis has put out a leaflet in two colors describing two brands of fire brick it manufactures, E & H Durofrax and E & H Texafrax. The former is designed for temperatures up to 3000 degrees F. and the latter up to 3100 F.

* * *

Robert Bryce, owner of Bryce Automobile Service, has installed an illuminated fountain for lubricating oil.

On Jan. 1 this service station began to supply the U. S. post office garage with 25,000 gallons of gasoline.

Bennett Pumps Corp., Muskegon, Mich., announce the following changes in its organization. H. E. Schulte, formerly Cleveland manager, has been transferred to central division which will be under the joint management of Mr. Schulte and J. L. Slonecker. Paul Coutchie also has been added to the central division. Harry E. Fuller, formerly St. Louis representative will replace Mr. Schulte in the Cleveland division. L. S. Schulte has been added to the New York office. Other men in the New York office are J. T. Walsh, manager, Frank W. Boyd and W. V. Cadmus. A new division has been established at Shreveport, La., under management of S. D. Henershott. A new division also has been established in Tulsa with Sam W. Smith, manager.

* * *

W. D. Shaffer, sole owner of the Shaffer Tool Works of Los Angeles, announces that he has taken over the Lee Wilkinson Tool Co. at Santa Fe Springs, operating this plant in conjunction with the Shaffer plant at Brea. Mr. Shaffer manufactures oil field specialties. Frank Mason, who has been with Mr. Shaffer for four years, will have charge of manufacturing operations. I. Thomas will be superintendent of the Santa Fe Springs. Robert J. Miller Co. and Robert N. Atwood Co. are handling Shaffer sales in the Mid-Continent.

* * *

E. M. Smith of Los Angeles, president of the Emsco Derrick & Equipment Co., with large plants at Los Angeles and Houston, left headquarters Jan. 6 for a trip to eastern points, planning to tour the oil country and make stops at the most important points. Mr. Smith is also president of the Pacific National Bank of Los Angeles in addition to being the prime mover in the organization of other enterprises interested in and serving the oil industry.

* * *

Ideco 122-foot steel rotary derricks are being used in wildcatting operations in Angola, Portuguese East Africa, according to a statement sent out by the International Derrick & Equipment Co. The sun is so hot there that the drilling crew protect themselves by thatching the derricks with palm leaves.

* * *

A. H. Blackall has been traveling Ohio the past few months as sales representative of the Marland Refining Co., handling their full line of products. He still keeps his headquarters in Chicago, but puts in most of the month in Ohio territory.

Chemist Gives Simple Methods For Temperature Conversion

CLEVELAND, Jan. 20

DR. ALFRED OBERLE, consulting chemist and research engineer, Kansas City writes in to give us his method for quick conversion of temperatures from the Fahrenheit to the Centigrade scale and vice versa. He says: "Some of the points may be helpful to those who do not carry handbooks or tables with them, especially the non-technical men.

"It is very evident that a number of other methods suggest themselves readily by comparing these schemes. This is a mere matter of taste or opinion. When I worked out these schemes I merely wanted some kind of a formula which is easy to remember or to carry in your note book so that I would not be compelled to resort to tables, especially where questions of temperature conversion came up unexpectedly."

Here are Dr. Oberle's methods of conversion:

C.	F.	Scheme I		Scheme II	
0	= 32	(0 x 2) — (0 x 0.2) + 32	= 32	(0 x 0.8) + (32 — 0)	= 32
1	= 33.8	(1 x 2) — (1 x 0.2) + 32	= 33.8	(1 x 0.8) + (32 — 1)	= 33.8
2	= 35.6	(2 x 2) — (2 x 0.2) + 32	= 35.6	(2 x 0.8) + (32 — 2)	= 35.6
3	= 37.4	(3 x 2) — (3 x 0.2) + 32	= 37.4	(3 x 0.8) + (32 — 3)	= 37.4
4	= 39.2	(4 x 2) — (4 x 0.2) + 32	= 39.2	(4 x 0.8) + (32 — 4)	= 39.2
5	= 41.0	(5 x 2) — (5 x 0.2) + 32	= 41.0	(5 x 0.8) + (32 — 5)	= 41.0
10	= 50.0	(10 x 2) — (10 x 0.2) + 32	= 50.0	(10 x 0.8) + (32 — 10)	= 50.0
15	= 59.0	(15 x 2) — (15 x 0.2) + 32	= 59.0	(15 x 0.8) + (32 — 15)	= 59.0
20	= 68.0	(20 x 2) — (20 x 0.2) + 32	= 68.0	(20 x 0.8) + (32 — 20)	= 68.0
30	= 86.0	(30 x 2) — (30 x 0.2) + 32	= 86.0	(30 x 0.8) + (32 — 30)	= 86.0
40	= 104.0	(40 x 2) — (40 x 0.2) + 32	= 104.0	(40 x 0.8) + (32 — 40)	= 104.0
50	= 122.0	(50 x 2) — (50 x 0.2) + 32	= 122.0	(50 x 0.8) + (32 — 50)	= 122.0
100	= 212.0	(100 x 2) — (100 x 0.2) + 32	= 212.0	(100 x 0.8) + (32 — 100)	= 212.0
150	= 302.0	(150 x 2) — (150 x 0.2) + 32	= 302.0	(150 x 0.8) + (32 — 150)	= 302.0
155	= 311.0	(155 x 2) — (155 x 0.2) + 32	= 311.0	(155 x 0.8) + (32 — 155)	= 311.0
160	= 320.0	(160 x 2)	= 320.0	(160 x 0.8) + (32 — 160)	= 320.0
161	= 321.8	(161 x 2) — (1 x 0.2)	= 321.8	(161 x 0.8) + (32 — 161)	= 321.8
162	= 323.6	(162 x 2) — (2 x 0.2)	= 323.6	(162 x 0.8) + (32 — 162)	= 323.6
165	= 329.0	(165 x 2) — (5 x 0.2)	= 329.0	(165 x 0.8) + (32 — 165)	= 329.0
200	= 392.0	(200 x 2) — (40 x 0.2)	= 392.0	(200 x 0.8) + (32 — 200)	= 392.0
300	= 572.0	(300 x 2) — (140 x 0.2)	= 572.0	(300 x 0.8) + (32 — 300)	= 572.0

A Few Points on the Conversion of Centigrade into Fahrenheit Degrees

1. At 160°C. corresponding degree F. is just **double.**
2. Below 160°C. corresponding degree F. **exceeds** double (increasing as C° decrease)
3. Above 160°C. corresponding degree F. is **below** double (decreasing as C° increase)

Centigrade	Fahrenheit	
At 0° C. the corresponding degree F. is double	plus	32
At 10° C. the corresponding degree F. is double	plus	30
At 100° C. the corresponding degree F. is double	plus	12
At 160° C. the corresponding degree F. is double		
At 200° C. the corresponding degree F. is double	minus	8
At 300° C. the corresponding degree F. is double	minus	28
At 400° C. the corresponding degree F. is double	minus	48
At 500° C. the corresponding degree F. is double	minus	68

This may be expressed in two schemes

Scheme 1

There is a difference in this method for degrees below 160°C. and those above 160°C.

BELOW 160° C. (3 Steps.)
1. **Double number of Centigrades.**
2. **Deduct 1/10 of this number (C.° double)** (1/10 = move decimal one point to the left of number obtained under 1)
3. **Add 32.**

ABOVE 160° C. (2 Steps.)
1. **Double number of Centigrades.**
2. **Deduct 0.2 for each Centigrade ABOVE 160°C.** (double number of centigrade ABOVE 160° C. and move decimal one point to the left.)

Scheme II

(2 Steps.)
1. **Multiply number of Centigrades by 0.8.**
2. **Add 32 + number of Centigrades.**

To illustrate these schemes see above table:

Substitution Publicity is Unfair, Says Campaigner

Staff Special

CLEVELAND, Jan. 20

THE usual publicity which has been given to alleged oil substitution has not been of value to the campaign, nor has it been fair to the oil industry, in the opinion of C. L. Whitehead, attorney for the Consumers' Protective League of Los Angeles, which has been conducting a campaign against substitution there. Mr. Whitehead has caused 33 convictions throughout the state of dealers who substituted on brands of motor oil. One dealer drew a fine of $400. In speaking of the campaign and the publicity, Mr. Whitehead recently said:

"One feature of the campaign concerning which we feel that a distinct service has been rendered the oil industry as a whole and the Independent dealers in particular, is the nature of the publicity which has appeared in the newspapers.

"In order to illustrate our meaning by resorting to comparisons we digress for a moment and refer to certain editorials which appeared several months ago in the National Petroleum News, the oil man's Bible. The editorial writer, Mr. Platt, who incidentally has a broad, comprehensive understanding and keen insight into the many phases of the petroleum industry and particularly its relation to the general public and the psychology which the latter bears to it, criticized certain organizations in the East and Middle-West for the apparently hasty and ill-advised manner in which they attempted to solve the substitution problem.

"TO BE specific, this is what occurred: investigations were made,—how thorough and comprehensive is rather questionable. At any rate, based on them, certain publicity was handed to the newspapers to the effect that 50 per cent and probably more of the oil dealers were dishonest. The resulting effect was to damage public confidence in the entire industry and the dealers in particular. An occurrence of a similar nature took place in one of our northern cities last summer.

"The newspaper articles read: 'Twelve Dealers Cited by District Attorney for Substitution.' So far as we know, no effort was made to prosecute any of them, nor was the public informed that these 12 were the only ones found cheating during a more or less comprehensive survey.

"Our method of procedure has been along this line—In San Francisco, from a list of about 70 suspected dealers, we found 15 against whom complaints could have been filed. The district attorney's office decided to prosecute only the three most flagrant cases and to warn the others. The publicity given to the press and which appeared in print was as follows: 'Three Garage Men Fined for "Bad Oil" Sales.' 'A Careful Check of Places Where Oil is Sold Shows that the Vast Majority of the Dealers are Honest.' 'Whitehead Announced that California has Fewer Violations of This Nature Than Any Other State.'

"We believe that publicity of this nature stimulates confidence in the oil industry and the dealers. While the other has the opposite effect, and in addition has little permanent value for the cause intended; it does, however, tend to justify to the uninformed pub-

Oil Patents Issued Recently

Production

Draw Works With Cooling Apparatus.—Edward Timbs, Los Angeles, Calif., assignor to Union Tool Co., Torrance, Calif. Filed May 26, 1925. No. 1,613,680.

Packing Structure.—John A. Zublin, Los Angeles, Calif. Filed Oct. 12, 1922. No. 1,613,862.

Underreaming Impact Drill.—John A. Zublin, Los Angeles, Calif. Filed March 20, 1923. No. 1,613,863.

Drill Bit.—Henry S. Cassriel, Coalinga, Calif. Filed Apr. 3, 1924. No. 1,613,932.

Process of Facing the Cutting Edges of Drilling Tools.—Richard D. Davies, Alhambra, Calif., assignor to Spengler Core Drilling Co., Los Angeles, Calif. Filed May 24, 1926. No. 1,613,942.

Sucker-Rod Centralizer. — George E. Moreland, Los Angeles, Calif., assignor to Western Drop Forge Co., Los Angeles, Calif. Filed Dec. 15, 1925. No. 1,614,381.

Wire-Rope Swivel Socket.—William H. Stainbrook, Winfield, Kans. Filed July 21, 1926. No. 1,614,407.

Pump Jack.—William M. Jenkins, Minneapolis, Minn. Filed May 27, 1925. No. 1,611,914.

Fishing Tool.—Peter Gustaf Leonard, West Tulsa, Okla. Filed Apr. 2, 1926. No. 1,611,923.

Lock-Dart Bailer Bottom.—Augustus B. Scott, Huntington Beach, Calif. Filed Feb. 6, 1925. No. 1,612,062.

Process for Breaking Petroleum Emulsions.—Melvin De Groote, St. Louis, Mo., assignor to Wm. S. Barnickel & Co., Webster Groves, Mo. Filed Apr. 29, 1926. No. 1,612,180.

Indicating Instrument. — James Ely, Rochester, N. Y. assignor to Taylor Instrument Co., Rochester, N. Y. Filed Jan. 27, 1926. No. 1,612,364.

Oil and Water Separator.—Edwin C. Weisgerber, Long Beach, Calif. Filed Sept. 26, 1923. No. 1,612,557.

Method and Apparatus for Recovering Oil from Loose Oil-Bearing Strata.—Edwin E. Claytor, New York, N. Y., assignor to Charles Paul Mackie, Newark, N. J. Filed Dec. 22, 1924. No. 1,612,611.

Pump.—John R. Kirley, Washington, Pa. Filed Nov. 22, 1922. No. 1,612,733.

Sucker-Rod Catcher.—Ed Curtis Smith, Graham, Okla. Filed June 1, 1925. No. 1,612,748.

Refining

Cracking of Hydrocarbon Oils—Charles Lester Parmelee, West Orange, N. J., assignor to Sinclair Refining Co., Chicago, Ill. Filed Oct. 8, 1924. No. 1,613,718.

Art of Preparing Pitches.—Francis M. Rogers and Oscar E. Bransky, Whiting, Ind., assignors to Standard Oil Co., Whiting, Ind. File Jan. 19, 1923. No. 1,613,723.

Process for Cracking or Converting Oils.—Otto P. Amend, New York, N. Y. Filed March 3, 1922. No. 1,613,735.

Producing Residual Oil Products.—Edward E. Bartels, Whiting, Ind., assignor to Standard Oil Co., Whiting, Ind. Filed Nov. 17, 1924. No. 1,613,737.

Continuous Distillation of Oils.—Frank A. Howard and Nathaniel E. Loomis, Elizabeth, N. J., assignors to Standard Development Co. Filed June 15, 1922. No. 1,613,754.

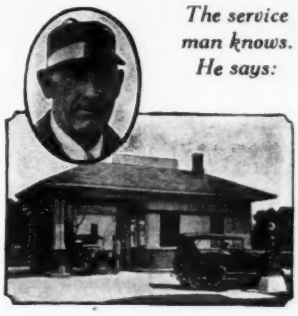
Dephlegmator.—Walter M. Cross, Kansas City, Mo., assignor to Gasoline Products Co., New York, N. Y. Filed Oct. 31, 1923. No. 1,612,265.

Miscellaneous

Fitting for Draining Lubricants from Vehicle Motor Cases.—Leland S. Bessonett, San Francisco, Calif., assignor to Standard Oil Co. of California, San Francisco, Calif. Filed Jan. 27, 1925. No. 1,613,738.

Header for Oil Tanks.—Joseph Douglass, Okmulgee, Okla. Filed Feb. 27, 1924. No. 1,613,876.

Hydraulic Oil Storage and Distribution System Having a Remote Control.—Frederick G. Farr, New York, N. Y. Filed Feb. 9, 1922. No. 1,612,424.



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"And it has cut down our service costs"

TO GET the real facts about ECO service, talk to the attendants at ECO equipped stations. They know the value of ECO service because they have lived with it, they have seen it work, they've heard what customers say about it.

And it is only natural for motorists to regard ECO as the finest air service, because ECO gives motorists what they want—an automatically equipped pressure control. It fills tires exactly to the pressure indicated at one application of the air chuck. No guess work—ECO is accurate to a pound every time.

Model 20

ECO

Automatic Air Station

"The Station That Rings the Bell"

Less Service Time More Selling Time

Tire filling by hand-gauge is really a two-man job. Attendants have to give a lot of time to helping car owners do the work.

But with ECO, one man works faster than two men without ECO. With ECO service many drivers never bother the attendant to help them fill tires. And if the attendant does help, ECO takes less than half the time of old-fashioned methods.

And ECO eliminates hand-gauge expense, because it does the work of a gauge and does it better. That's why wherever installed, ECO cuts down the cost of air service. Put ECO Automatic Air Service at work for you. Equip your present air towers with ECO Automatic Air Inflators. Specify ECO for all new stations. *ECO comes in eight models, at prices that will interest you. Write today for detailed information.*

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Successors to Western Manufacturing Company

Established 1862

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NAPHTHA
GAS OILS
PARAFFINE WAX
ASPHALT

Fuel Oil--Lubricating Oils

CYLINDER ENGINE CORDAGE

RED AND PALE PARAFFINE OILS

lic the continued existence and probable increased emoluments of the organizations responsible for it."

"Investigations disclose that the practice of substitution is to a large extent due to certain 'bootleg' oil companies, their salesmen and truck drivers. It may be said that this is the source from which the evil emanates. And since the various organizations and newspapers behind this movement are determined to stamp out the practice, regardless of consequences, to guilty parties, determined efforts will be made to strike at the source. This means to secure evidence on oil companies directly or indirectly encouraging the crime. Here is where dealer organizations, their members and in fact all honest dealers can render valuable aid and assistance, and we take this opportunity to call upon you for your active interest and co-operation.

"You can help in this manner: When a salesman tries to induce you to buy his product and put it into a drum bearing the label of some other company, let us know at once at our Los Angeles address, 329 Merchants National Bank Bldg. When a truck driver offers to dump into some other company's drum, also let us know. In both cases, give us the name of the individual, his company and the date on which it occurred. This is all that is required of you; we will do the rest."

Mr. Whitehead says that a recent check of the situation in California shows that a smaller percentage of the dealers by quite a number, is substituting this year than last and he believes that improvement will continue. The Garage Men's Association and the Independent Service Dealers' Association, Mr. Whitehead says, have co-operated.

Alabama Plant is Testing

TULSA, Jan. 20.—Test runs are being made at the new refinery of the Alamo Refining Co. north of Isom in the Panhandle field, Texas. It is expected that the plant will be on a regular production basis within a short time.

It will have initial capacity of 2000 barrels per day. Later two additional units may be built bringing it up to 6000 barrels. The plant was designed by M. P. Youker, formerly general superintendent of refineries for the Waite Phillips Co. His associates in the company are R. B. Pringle and O. L. Cordell, both formerly officers of the Waite Phillips Co.

LOS ANGELES,—J. O. Clutter, sales manager for the D & B Pump & Supply Co., was in Los Angeles for a short visit early in January after spending several months in the Mid-Continent and other oil producing sections of the United States.

PITTSBURGH, PA.—H. J. Theil has opened a new service station at West End here, handling Sinclair products.

The genuine VIKING alone has the VIKING efficiency and principle!

An Ever Increasing Allegiance To The Viking By The Oil Industry

WHEREVER pumps are used in the oil industry---throughout the nation ---Viking Pumps are to be found.

They have been installed a unit at a time by the smaller companies and purchased by the thousands where the need warranted.

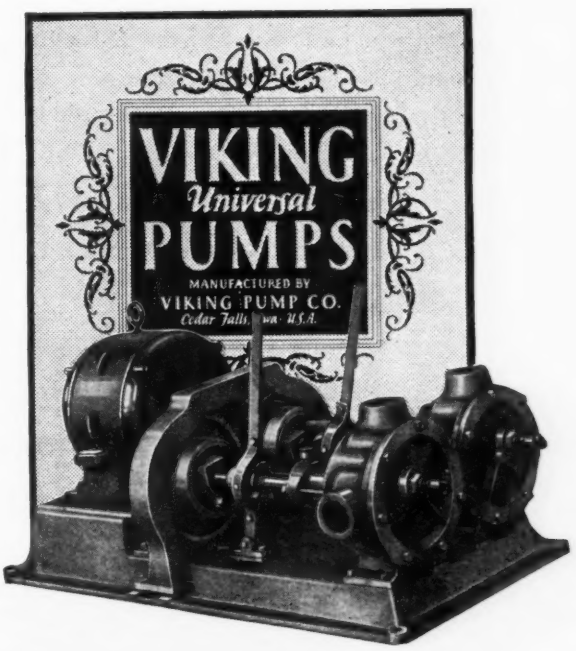
Unusual records that mark the history of service have come back to us---records of low cost and operation---of negligible repair trouble. The faithful performance of the Viking has won for itself striking loyalty and allegiance.

Viking performance DOES bring an end to your pump troubles. The perfection of the rotary principle is fully developed in the Viking. There are only two movable parts. Year after year bring uninterrupted service. You will find that the Viking WILL NOT LEAK. Further the Viking offers a greater capacity and even flow—less power is needed.

Any of the two inch Vikings will load an 8,000 gallon car in one hour and thirty minutes.

When you specify a Viking, be sure there is no substitution. Viking Pumps can be imitated in appearance but not in principle and performance.

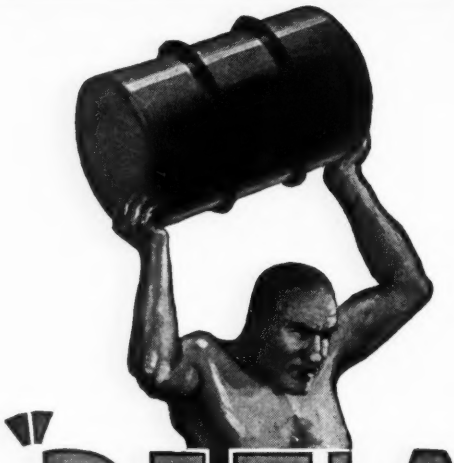
Our large factories concentrate on the building of pumps. There is a size that will suit your needs exactly. *Why not write today for a catalog? We shall be glad to forward it promptly.*



Viking Pump Company

Cedar Falls **Iowa**

VIKING PUMPS



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The set sells for $12. Send us your order and make your check payable to—

National Petroleum News

834 Caxton Building Cleveland, Ohio

New Oil Station Construction

Sedalia, Mo.—Milton Oil Co. will expend $50,000 in building program, which will include construction of distributing plant and several filling stations south of Edwardsville, Ill., according to C. M. E. Reves, vice president. Headquarters are at Sedalia.

* * *

Le Mars, Ia.—Plymouth Cooperative Oil Co., recently organized, with Jens Petersen, of Merrill, Ia. president, will build bulk station at Hinton, Ia.

* * *

East Prairie, Mo.—Karl J. Guenter of Guenter Service Co. purchased property for filling station. Construction of several stations is being planned.

* * *

Groesbeck, Tex.—Filling station and garage is being erected here and will be operated by D. L. McReynolds and W. A. Robbins.

* * *

Kansas City, Kan.—Long Oil Co., with headquarters at Manhattan, Kan., plans to build several filling stations here.

* * *

Princess Anne, Md.—Harry Phoebus, automobile dealer of Oriole, is completing filling station.

* * *

Joplin, Mo.—Cunningham-Marks Oil Co., of Miami, Okla. will build service station here.

* * *

Enid, Okla.—Butts Oil Co. and Champlin Refining Co. to build filling stations.

* * *

Salina, Kan.—L. P. McMurtray, of the Auto Electric Service Co. to build filling station.

* * *

Nebraska City, Neb.—E. L. Nicholas and John Ohnmacht will build bulk station.

* * *

Kansas City, Mo.—Benzo-Gas Motor Fuel Co. leased property for filling station.

* * *

Bixby, Okla.—Roman Alby and George Rocks are completing filling station.

* * *

Jonesboro, Ark.—Gulf Refining Co. will build $10,000 filling station here.

* * *

Oilton, Okla.—Magnolia Petroleum Co. completing filling station here.

* * *

Alta Vista, Kan.—Sinclair Refining Co. is completing filling station.

* * *

St. Louis, Mo.—Lubrite Refining Co. to build service station.

* * *

Jefferson, Wis.—Harold Keane to erect filling station.

* * *

Burlington, Ia.—Charles Schell, Jr. will build bulk station.

Sheboygan, Wis.—Wadhams Oil Co. will build filling station in the spring.

* * *

Caruthersville, Mo.—Standard Oil Co. of Indiana will build service station.

* * *

Kansas City, Kan.—Henry Uihlein to build filling station on Central Ave.

* * *

Camden, Ark.—Gulf Refining Co. bought property for filling station.

* * *

Hartford, Conn.—Standard Oil Co. of New York to erect service station.

* * *

Blackwell, Okla.—Service station will be erected here by The Texas Co.

* * *

Okmulgee, Okla.—Marland Refining Co. will build service station here.

* * *

Edmond, Okla.—Magnolia Petroleum Co. will build $7000 filling station.

* * *

Carthage, Mo.—Standard Oil Co. of Indiana will build filling station.

* * *

North Platte, Neb.—The Texas Co. plans to build filling station here.

* * *

St. Paul, Minn.—Standard Oil Co. of Indiana to build service station.

* * *

Mankato, Minn.—Standard Oil Co. of Indiana to build service station.

* * *

Crowley, La.—Louisiana Oil Refining Corp. building filling station.

* * *

Goose Creek, Tex.—Claude W. Smith is erecting filling station here.

* * *

York, Neb.—Guy Cogswell seeking permit for filling station.

* * *

Cape Girardeau, Mo.—Kelso Oil Co. is building service station.

* * *

Waxahachie, Tex.—Jack McCarter is building filling station.

* * *

Florence, Kan.—Marland Refining Co. building filling station.

* * *

Alexandria, La.—The Texas Co. is building filling station.

* * *

Waco, Tex.—Magnolia Petroleum Co. to build filling station.

* * *

Lees Summit, Mo.—M. H. Smith completing filling station.

* * *

Norfolk, Neb.—The Texas Co. will erect service station.

* * *

Anthony, Kan.—Charles Speer completing filling station.

* * *

Winfield, Kan.—P. H. Frankenfeld to build filling station.

* * *

Celeste, Tex.—Mart Compton will build filling station.

* * *

Kenton, O.—Nash Oil Co. is completing filling station.

* * *

Luray, Kan.—E. R. Laird to build filling station.

Lubricating Oils

(High Grade Gulf Coast)

200 to 2000 Viscosity

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With Zero Cold Test

A Complete Service for Jobbers

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It discusses the origin, nature and testing of lubricants and every phase of lubrication engineering.

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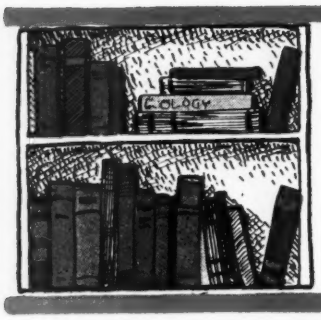
NATIONAL PETROLEUM NEWS

825 Caxton Building Cleveland, Ohio



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DID you ever stop to realize that there is a bigger job *awaiting your ability to handle it?*

And the way to develop that ability is to *study books* devoted to your particular branch of the oil business!

Here in the OIL MAN'S BOOKSHELF you will find books on oil that you can read with the greatest profit—whether you are in producing, refining, natural gasoline or marketing divisions of the industry. If you do not find the subjects you are interested in, write us.

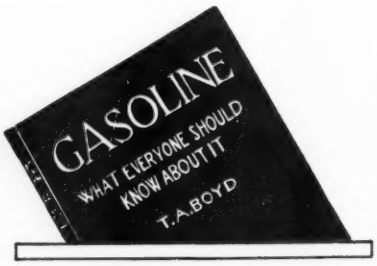
PETROLEUM PRODUCTION ENGINEERING

Practical operating men will find a great deal of valuable data in "Petroleum Production Engineering" by L. C. Uren, Asso. Prof. University of California.

Production practices which have developed in California and about which little is known in other fields, are given.

Among the Chapter headings are—Churn drilling methods; Rotary drilling; Casing, appliances and methods; Fishing tools and methods; Exclusion of water from oil and gas wells; Control of high-pressure wells; management of wells to secure maximum production; Power; Dehydrating and separation of sand and gas; Storage; Transportation; Records.

650 pages—well illustrated—**$6.**



This is the complete story of "*Gasoline*" told in popular language, and written by an authority on the subject of its use in motor cars—T. A. Boyd, head of fuel oil section, General Motors Research Corp.

What gasoline is, where it comes from, its properties, what distinguishes good gasoline from bad, how the motorist can get more miles out of a gallon, and help in the economy of this important fuel—all these facts are given in chatty, non-technical style and profusely illustrated.

"*Gasoline*" is a message to the public that has so often been recommended to the oil industry. Every man engaged in the making and distributing of motor fuel should read it.

206 pages—popularly priced at $2.50.

OIL AND GREASE FORMULAS
By Forrest A. Hoff

200 guaranteed formulas, with instructions for their use, by Forrest A. Hoff, consulting lubricating engineer.

Recommended to the jobber who wants to make and sell his own line of grease and oil.

The set consists of a compounding chart, Key to Formulas and a Book of Instructions—all arranged with a system of keying that insures secrecy by controlling the compounding from the office, the plant employees working with a series of numbered oils.

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ON THE LAZY BENCH

National Petroleum News

Pedigreed

A young eastern college man applied for a job in Chicago and gave as reference a business man of Boston. In reply to the inquiry, the Boston man wrote:

"I know Mr. Bean to be a fine character and highly connected. His sister is married to Duke Penniless, his mother is president of the Pre-revolutionary Dames, his grandfather is a college president, his great-grandfather was an illustrious state governor and his family on both sides go back to the Mayflower."

The Chicago man, who had been graduated from a farm and then did post-graduate work in the stock yards, replied:

"Thanks for your kind letter regarding Mr. Bean, but we are afraid you misunderstood our request. We were thinking of using this young man in our sales department—not for breeding purposes!"

—The Loreco Diamond

◈ ◈ ◈

Hoot, Mon!

Rhys Morgan, the Welsh tenor, has a keen sense of humor no less than a highly developed musical ability. He went out West on his vacation, and inspected the film colony at Hollywood. In discussing his plans the subject of motion pictures came up.

"I wonder," one of the party inquired, "how the slow motion picture was ever conceived?"

"Perhaps," Morgan suggested good naturedly, "a camera man was watching two Scotchmen reach for the restaurant check."

—The Marion Line

◈ ◈ ◈

Boy Scout

"I did one charitable act today," remarked a merchant as he sat down to dinner.

"I'm glad to hear it, dear," said his wife. "Tell me about it."

"Oh, one of my clerks wanted an increase in salary, so that he could get married, and I refused to give it to him.

—The Loreco Diamond

◈ ◈ ◈

In parts of Germany, women have to pay a tax if their hair is cut short. It's hard to believe that Germany has a shingle tax that we haven't.

—Keene Thrusts

◈ ◈ ◈

"This cake is hard, dear."

"Of course, it's marble cake."

—The Atlantic Seal

The Mother of Invention

It was six o'clock in the evening and the little red car manned by one male was crowded to the limit. "Here, you!" bawled the motorman angrily, "you rang up a fare. Do that again and I'll put you off the car!"

The youth jammed in the middle of the car at once rang up another fare. Thereupon the motorman stopped the car, forced his way through the jam and propelled the offender through the crowd to the edge of the platform.

"Thanks," said the youth. "Here's your seven cents. I didn't see any other way to get off."

—The Marion Line

◈ ◈ ◈

These Women! These Women!

Slim bought a new shirt, and on a slip pinned to the inside found the name and address of a girl, with the words, "Please write, and send photograph."

"Ah!" breathed Slim, "here is romance."

And forthwith he wrote the girl and sent her a picture of himself. In due course of time an answer came, and with heart aflutter, Slim opened it. It was only a note.

"I was just curious to see," it read, "what kind of a looking gink would wear such a cheap shirt."

—The Bridgeport Driller

◈ ◈ ◈

"If you collect this money," said the hardware merchant, "I will give you a regular job."

To the merchant's astonishment, the young man returned in half an hour with the money.

"How did you do it?" he gasped.

"I told him," said the young man, "that if he didn't pay me I would tell all his other creditors that he had paid."

—The Atlantic Seal

◈ ◈ ◈

Speaking Structurally

Driller: "That girl you've started going with is a smart little gold-digger."

Toolie: "Then all I've got to say is, she's a darn poor geologist."

—The Bridgeport Driller

◈ ◈ ◈

"What's the charge on this battery?"

"Fifty volts."

"How much is that in United States money?"

—Union Oil Bulletin.

◈ ◈ ◈

It is no longer fashionable for a wife to give her husband cigars he can't smoke. She now gives him cigarettes that she can.

—Keene Thrusts

ALL-IN-1 FOLIO

$24.00
Less 10% for cash

Closed, 301 is a handsome Portfolio of selected, 5 oz., black cowhide. Open however, it is an efficient, attractive Display Case, containing 18 four ounce cut-bottom bottles with metal capped corks, and 6 one ounce squat grease jars. There are no trays to lift out, no metal clips to break the bottles. The flaps are lined with washable Keratol, and the samples backed against red plush. There is also an ample pocket for order book and literature. Satisfaction is guaranteed. Your name embossed in gold *free*.

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Room *with Bath*—$2.50 *and up*
Double Room *with Bath*—$4.00 *and up*

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Lunch 75c
Dinner . . . . . 85c & $1.25
also A la Carte Service

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THE purpose of the Sinclair "Law of Lubrication" is to help the motorist lubricate his car to prevent *Waste of Power* and to maintain economical transportation. Read the law; know its soundness; know its simplicity; then consider its value for increasing your sales of motor oil.

May we show you the Law of Lubrication booklet which Sinclair dealers distribute to motorists?

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45 Nassau Street, New York

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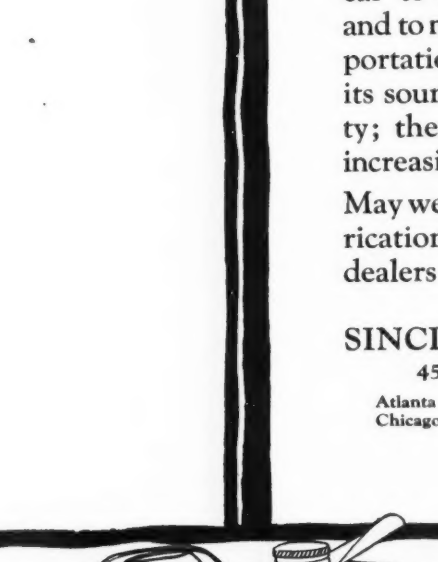

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For every machine *of*
every degree *of* wear
there is a scientific
SINCLAIR OIL
to suit *its* speed *and*
seal its power. . . .

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Refinery - Tank Wagon Markets

National Petroleum News

Mid-Continent Kerosene More Active; Gasoline Buying is Slow

Staff Special
TULSA, Jan. 22

WHILE Mid-Continent gasolines moved along steadily this week with no unusual developments, kerosenes began to feel new life under the stimulus of more jobber inquiries and the purchase of approximately 2,300,000 gallons of 41-43 for export.

The export purchase was made by the North American Car Corp., following inquiries sent the middle of the week to all Mid-Continent refiners. The order was placed with refiners in Oklahoma, Kansas, Texas and Louisiana. The company allowed the refiners 30 days in which to complete shipment to its Gulf port terminal. The price was not revealed but several refiners who offered goods said their quotations were around 5¾ cents, f. o. b. north Texas, which would be around 5⅜ cents, Group 3.

A large refining-marketing company about 10 days ago began to buy some kerosene for shipment within the next six weeks, their plan being to store as much as possible preparatory to the expected increase in demand in the farming sections.

Kansas refiners have kept their kerosene market in good shape virtually all winter and now the demand for 42-44 gravity goods for incubators is providing them with an even better market than other areas have had.

EXPORTERS continued to remain practically out of the gasoline market this week but refiners still had enough orders to keep them from piling up any distress high gravity gasolines. One company was reported to have bought a small quantity of 64-66, 375 e. p. gasoline in Texas for shipment up to March, but the volume could not be ascertained. It was generally considered only a small order.

Oklahoma refiners held their prices of 58-60 U. S. Motor at 9 to 9½ cents all week. Most Motor however, moved at 9 to 9¼ cents. Several of the larger companies were quoting 9½ cents.

Jobber buying was still hand-to-mouth and orders were spotty. One refiner said he didn't make a sale of U. S. Motor yesterday but today he had booked 11 cars until noon.

A few inquiries for U. S. Motor for February shipment have been received, but not enough as yet to indicate what trend the market will take. Refiners appear reluctant to quote over that period, feeling that the market probably will show a little more strength unless weather is unusually bad.

REVISION of the quantity discount agreement in contracts written by the Standard Oil Co. of Indiana caused considerable speculation in this area, but apparently had little effect on the market. Several expressed the opinion that the granting of 1 cent off on dumps of 50 gallons throughout the territory, except in Kansas and Chicago, was equivalent to a 1-cent tank wagon reduction.

One refiner in Oklahoma who makes a 60-62, 400 e. p. gasoline, booked a few orders at 9¾ cents for resale. He said that he was finding considerable competition from refiners in north Texas who were quoting 9⅝ to 9¾ cents Group 3 basis. A check of the north Texas field proved his statements were substantially correct. One refiner in that area is making little U. S. Motor now, it is said, his output being mostly of the 400 e. p. grade.

Domestic grade 64-66, 375 e.p. gasoline did not move as well this week as might be expected. The fact that a considerable amount of 64-66 gravity gasoline has been sold for export, however, has kept the domestic prices fairly stable.

Natural gasolines went off another cent this week. More activity developed late in the week, however, and a few manufacturers who around the first of the week had loaded cars on their loading tracks reported today they had cleared most of this distress material. Several 10- to 25-car orders were placed and a few handlers expressed the opinion that the tide was about to turn if it already had not turned.

With the price of Grade C in Oklahoma today at 6¼ cents, the market for this material is the lowest it has been since June, 1924. Grades A and B (old specifications in use prior to October, 1924) were about the same price in August, 1924, as Grades A, AA, B and BB are today.

A few refiners reported a better movement of distillates while others said their orders were coming in slowly. Quotations as low as 4¾ cents for 38-40 straw distillate from north Texas were out late in the week. Oklahoma refiners were holding their prices around 5 to 5¼ cents.

With kerosene showing a tendency to hold around present price levels at least for the time being and with the possibility that the price will go higher as soon as the spring demand starts, refiners for the most part are of the opinion that for the next two months at least distillates will hold around the 5-cent level. With reports today of a cold wave in the north, and with salesmanagers able to look from their windows upon a sleet covered Tulsa, more optimism was being shown over burning oil than over gasolines.

DESPITE the apparent quietness of the fuel oils on the spot market, material continued to move out in good volume this week. The same was true of the previous week as was shown by reports to National Petroleum News from 124 Mid-Continent refineries when fuel stocks were reduced almost 3,000,000 gallons. Most of the material is moving out on contracts, refiners reported. One large refinery in Oklahoma has little fuel to offer on the spot market because of several large contracts.

Louisiana fuel oil market is higher because of heavy buying by railroads. In Texas the heavy draft on fuels by industrial and rail consumers also has kept that market tight and strong.

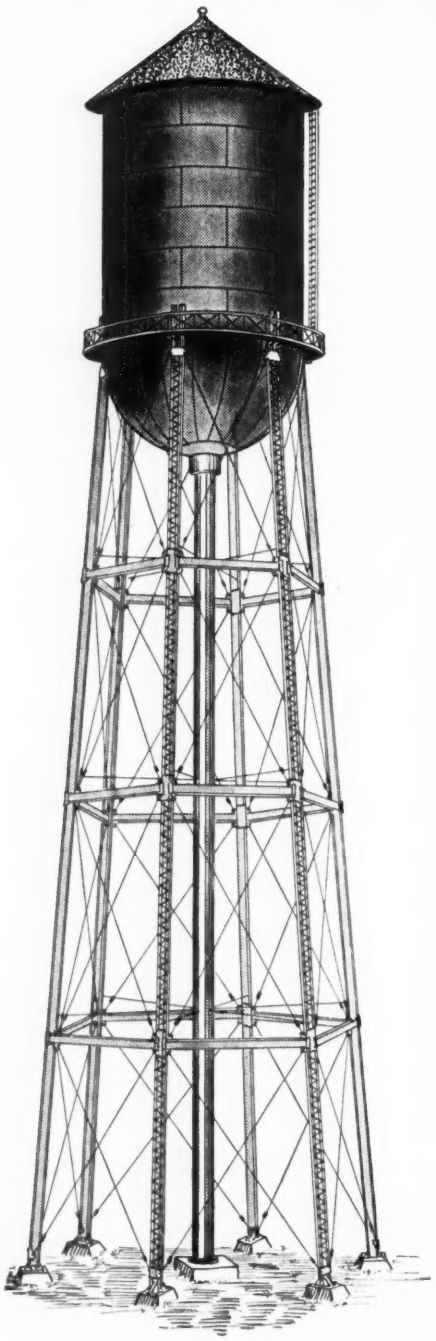
Oklahoma refiners who make neutrals and cylinder stocks, continued to maintain their price schedules and reported business fair for the season.

Wax movement has slowed up somewhat, however, and refiners were finding it rather difficult to get more than 4¼ cents a pound. One company this week sold 25 tons at 4.225 cents a pound.

KANSAS CITY, KAN.—Inter-State Oil Co., with headquarters here, is doubling the capacity of its compounding plant here, making it one of the large plants in this territory, according to Roy E. Spear, sales manager.

Youngstown TANKS
STANDARDIZED

Elevated Steel Water Tanks



—any type
—any capacity
—any size

YOUNGSTOWN Elevated Steel Water Tanks are designed by engineers who are thoroughly familiar with this type of structure. They are manufactured by one of the largest companies in the country and bear the same sweeping guarantee that has established a world-wide reputation for Youngstown Tanks.

These tanks insure a ready supply at uniformly high pressures maintained at minimum pumping costs. They provide surplus water storage for fire protection, and when used in connection with overhead sprinklers and other fire prevention systems, substantially reduce insurance rates. Youngstown Tanks and accessories are designed to incorporate the recommendations of all insurance authorities.

As specialists in elevated steel water tank construction we have developed designs and specifications which distinguish the Youngstown line at prices that are based upon quantity production.

STANDPIPES—GENERAL STEEL STORAGE—STEEL PLATE CONSTRUCTION
HOT WATER TANKS
FILLING STATION—BULK STATION—REFINERY EQUIPMENT

Our engineers will gladly co-operate in developing your plans and specifications at no extra expense. Write at once for complete details.

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Refinery Markets on Light Oils and Lubricants

Pennsylvania, Oklahoma, Kansas, North and South Texas, Louisiana, Arkansas, California and New England

GASOLINE AND NAPHTHA

PENNSYLVANIA	Prices Jan. 24	Prices Jan. 17	Prices Jan. 10
52-54 Naphtha	11¼–11¾	11¼–12	11½–12
54-56 Naphtha	11½–12	11¾–12¼	11¾–12¼
58-60 Gasoline	11½–12	11⅝–12	11⅝–12
60-62 Straight-run gasoline	12½–13	12½–13	12½–13
64-66 Straight-run gasoline	13½–14	13¼–14	13½–14½
68-70 Straight-run gas. 350-360 E.P.	14½–15	14¾–15	14¾–15
68-70 Straight-run gas. 305-320 E.P.	18 –20	19 –20	19 –20
OKLAHOMA			
48-50 450 E. P. naphtha	9 – 9⅛	9 – 9⅛	9 – 9⅛
50-52 450 E. P. naphtha	9 – 9⅛	9 – 9⅛	9 – 9⅛
56-58 450 E. P. gasoline	8⅞– 8¾	8¾– 7⅞	8¾– 8⅞
56-58 U. S. Motor gasoline	8¾– 9	8¾– 9	8¾– 9
58-60 450 E. P. gasoline	– 8¾	8¾– 8⅞	8¾– 8⅞
58-60 U. S. Motor 437 E. P.	9 – 9¼	9 – 9¼	9 – 9¼
60-62 437 E. P. gasoline	9¼– 9½	9¼– 9½	9¼– 9½
60-62 400 E. P. gasoline	9¾–10	10 –10⅛	10 –10¼
64-66 390 E. P. gasoline	–10¼	10¼–10½	10⅜–10⅝
64-66 375 E. P. gasoline	10½–10¾	10⅝–10¾	–10¾
68-70 350-360 E. P. gasoline	–11¼	11¼–11½	11¼–11½
KANSAS*			
58-60 U. S. Motor gasoline	9¼– 9½	9¼– 9½	9⅜– 9⅝
60-62, 400 E. P. gasoline	–10¼	10¼–10½	10¼–10½
64-66 375 E. P. gasoline	–10¾	10⅞–11	–11
*F. O. B. refinery Kansas destination.			
NORTH TEXAS			
48-50 450 E. P. naphtha	– 8¾	– 9	9 – 9¼
56-58 450 E. P. gasoline	– 8⅝	– 8⅝	8¾– 9
58-60 450 E. P. gasoline	– 8¾	– 8¾	8⅞– 9
56-58 U. S. Motor gasoline	8¾– 8⅞	– 8⅞	– 9
58-60 U. S. Motor gasoline	– 9	9 – 9⅛	9 – 9¼
64-66 390 E. P. gasoline	–10¼	10¼–10½	10⅜–10⅝
64-66 375 E. P. gasoline	10½–10¾	10⅝–10¾	10⅝–10¾
68-70 350-360 E. P. gasoline	–11¼	–11¼	–11¼
NORTH LOUISIANA			
58-60 U. S. Motor 437 E. P.	9 – 9¼	9 – 9¼	9⅛– 9¼
ARKANSAS			
56-58 450 E. P. gasoline	– 8¾	– 8¾	– 8¾
58-60 450 E. P. gasoline	– 8⅞	– 8⅞	– 8⅞
58-60 U. S. Motor gasoline	9 – 9¼	– 9	9⅛– 9¼
CALIFORNIA			
*54-58 U. S. Motor 437 E. P.	9½–10	9 – 9½	9 – 9½
*58-61 U. S. Motor, 437 E. P.	10½–11	10½–10¾	10½–10¾
*42-45 Engine distillate 445-480 E. P.	7 – 7½	7 – 7½	7 – 7½
*2c tax to be added if used in state.			
NEW ENGLAND (F. O. B. Boston and Fall River)			
58-60 U. S. Motor gasoline	–12⅜	–12½	–12⅜

NATURAL GASOLINE

(Note: End point of all grades, not over 375° F.)

OKLAHOMA			
Grade AA, 80-87.9 375 E. P.	– 7¾	– 8½	9⅛– 9⅜
Grade A, 72-79.9 375 E. P.	– 7¾	– 8½	9⅛– 9⅜
Grade BB, 84-92, 375 E. P.	6½– 6¾	– 7½	8⅛– 8¼
Grade B, 76-83.9, 375 E. P.	6½– 6¾	– 7½	8⅛– 8¼
Grade C, 80-90, 375 E. P.	– 6¾	– 7¼	– 8
NORTH LOUISIANA			
*Grade Double A	– 9	– 9	– 9½
*Grade Double B	– 8	– 8	8½– 8⅝
*Grade C	– 7¾	– 7¾	8¼– 8½
*F. O. B. Monroe District.			
NORTH TEXAS			
*Grade Double A	– 7¾	– 8½	9⅛– 9⅜
*Grade A	– 7¾	– 8½	9⅛– 9⅜
*Grade Double B	6½– 6¾	– 7½	8⅛– 8¼
*Grade B	6½– 6¾	– 7½	8⅛– 8¼
*Grade C	– 6¾	– 7¼	– 8
*F. O. B. Breckenridge.			
CALIFORNIA			
75-85, 375-390 E. P. blend	11½–13	11½–13	11½–13

MOTOR FUEL BLENDS

PENNSYLVANIA			
68-70 Grav. 437 E. P. blend	12¼–12½	12¼–12½	12¼–12½
64-66 Grav. 437 E. P. blend	12 –12¼	12 –12¼	12 –12¼
60-62 Grav. 437 E. P. blend	12 –12¼	12 –12¼	12 –12¼
68-70 Grav. 420 E. P. blend	12¼–12½	12¼–12½	12¼–12½
OKLAHOMA			
64-66 437 E. P. blend	8¾– 9	– 9	9 – 9¼

BURNING OILS

PENNSYLVANIA			
45 Water White Kerosene	– 8¼	8¼– 8½	8¼– 8½
46 Water White Kerosene	– 8¾	8¾– 9	8¾– 9
47 Water White Kerosene	– 9¼	9½– 9¾	9¼– 9¾
OKLAHOMA			
41-43 Water White Kerosene	5¾– 6	5¾– 6	6 – 6⅛
42-44 Water White Kerosene	6½– 6¾	6½– 6¾	– 6¾
KANSAS			
41-43 w. w. kerosene	6¼– 6½	6¼– 6½	6⅜– 6⅝
42-44 w. w. kerosene	6¾– 7¼	6¾– 7	– 7
NORTH TEXAS			
40-42 White Kerosene	5⅝– 5¾	5¾– 5¾	– 5¾
41-43 White Kerosene	5⅞– 6	5¾– 6	5⅞– 6
NORTH LOUISIANA			
41-43 Water White Kerosene	– 6¾	– 6¾	– 7

ARKANSAS	Prices Jan. 24	Prices Jan. 17	Prices Jan. 10
41-43 Water White Kerosene	– 6¾	– 7	– 7
CALIFORNIA			
38-40 Water White Kerosene	6 – 6½	6 – 6½	6 – 6½
NEW ENGLAND			
**40-43 Water White Kerosene	none available	**– 9½	**–10

NEUTRAL OIL

PENNSYLVANIA			
(Viscosity at 70° F.)			
200 Vis. No. 3 Assoc. Filt.	none available for spot delivery	none available for spot delivery	–30
180 Vis. No. 3 Assoc. Filt.			–28
150 Vis. No. 3 Assoc. Filt.			–25
(Non-Viscous)			
34 Grav. 330-340 Flash	8 – 8½	8 – 8¼	8 – 8¼
36 Miners Neutrals 300-305 Flash	7¼– 7¾	7½– 7¾	7½– 7¾
OKLAHOMA			
(Viscosity at 100° F.)			
100 Vis. No. 2 color	7 – 7½	7 – 7½	7 – 7½
150 Vis. No. 3 color	9 –10	9 –10	9 –10
150 Vis. No. 4 color	– 9¾	– 9¾	– 9¾
180 Vis. No. 3 color	10 –11	10 –11	10 –11
180 Vis. No. 4 color	10 –10½	10 –10½	10 –10½
180 Vis. No. 5 color	10 –10¼	10 –10¼	10 –10¼
200 Vis. No. 3 color	10¾–11¾	10¾–11¾	10¾–11¾
200 Vis. No. 4 color	–11½	–11½	–11½
200 Vis. No. 5 color	9¼–11¼	9¼–11¼	9¼–11¼
220 Vis. No. 3 color	12 –13½	12 –13½	12 –13½
220 Vis. No. 4 color	–13	–13	–13
220 Vis. No. 5 color	12 –12¾	12 –12¾	12 –12¾
240 Vis. No. 3 color	14 –15	14 –15	14 –15
240 Vis. No. 4 color	–14½	–14½	–14½
240 Vis. No. 5 color	13 –14	13 –14	13 –14
280 Vis. No. 3 color	16 –17	16 –17	16 –17
280 Vis. No. 4 color	–16½	–16½	–16½
280 Vis. No. 5 color	15 –16	15 –16	15 –16
300 Vis. No. 5-6 color	–17	–17	–17
GULF COASTAL			
(Viscosity at 100° F; pour test 0)			
100 Vis. No. 2 Color Unfilt. Pale	8 – 9	8 – 9	8 – 9
200 Vis. No. 3 Color Unfilt. Pale	11 –12	11 –12	11 –12
300 Vis. No. 3 Color Unfilt. Pale	12 –13	12 –13	12 –13
500 Vis. No. 3½ Color Unfilt. Pale	14 –15	14 –15	14 –15
750 Vis. No. 4 Color Unfilt. Pale	16 –17	16 –17	17 –18
200 Vis. No. 5½ Color Red Oil	9 –10	9 –10	9 –10
300 Vis. No. 5½ Color Red Oil	10 –11	10 –11	10 –11
500 Vis. No. 6 Color Red Oil	12 –13	12 –13	12 –13
750 Vis. No. 6 Color Red Oil	15 –16	15 –16	15 –16
CALIFORNIA			
(Viscosity at 100° F.)			
100 Vis. No. 2 color	9½–10	9½–10	9½–10
100 Vis. No. 3 color	8 – 8½	8 – 8½	8 – 8½
200 Vis. No. 3 color	10 –10½	10 –10½	10 –10½
300 Vis. No. 3 color	11 –11½	11 –11½	11 –11½
450 Vis. No. 3½ color	13 –13½	13 –13½	13 –13½
550 Vis. No. 3½ color	15 –15½	15 –15½	15 –15½
600 Vis. No. 3½ color	15½–16	15½–16	15½–16
100 Vis. No. 5 color	7 – 7½	7 – 7½	7 – 7½
200 Vis. No. 5 color	9 – 9½	9 – 9½	9 – 9½
300 Vis. No. 5 color	9½–10	9½–10	9½–10
400 Vis. No. 6 color	11½–12	11½–12	11½–12
500 Vis. No. 6 color	12 –12½	12 –12½	12 –12½
600 Vis. No. 6 color	12½–13	12½–13	12½–13
700 Vis. No. 7 color	14½–15	14½–15	14½–15

CYLINDER STOCKS

OKLAHOMA			
190-200 Vis. at 210° Bright Stock	31 –35	31 –35	31 –35
150-160 Vis. at 210° Bright Stock	27 –31	27 –31	27 –31
600 E Stock 140-150 Vis. —210°	18 –20	18 –20	18 –20
600 Steam Refined Olive Green	8 –11	8 –11	8 –11
600 Steam Refined Dark Green	5½– 7½	5½– 7½	5½– 7½
Black Oil	5 – 6	5 – 6	5 – 6
PENNSYLVANIA			
(1-inch Immersion Test)			
600 Steam Refined	12 –12¼	11¾–12½	11½–12½
650 Steam Refined	15½–16	15½–16½	15½–16½
600 Flash	20 –21	19½–21	19½–20½
625 Flash	–30	29 –30	28½–29½
600 Warren E	20 –20½	20 –20½	19½–20½
600 Oil City E	19 –19½	19 –19½	18½–19
600 D Filtered	25½–26	–26	25½–26
Cold Test Stocks (bright filtered)	36½–38	36½–38	36 –37
Cold Test Stock (dark filtered)	34 –35	34 –35	34 –35

(Note—Prices of total immersion test goods average 1 to 3 cents per gallon higher.)

LONG RESIDUUM STOCKS

PENNSYLVANIA			
60-65 vis. @ 210, 440-450 flash No. 5½ color	–33½	–34	–33½
70-75 vis. @ 210, 450-455 flash No. 6 color	–34½	–35	–34½
80-85 vis. @ 210, 440-450 flash No. 7 color	–35½	–36	–35½
80-85 vis. @ 210, 450-460 flash No. 7-8 color	–36½	–37	–36½
80-85 vis. @ 210, 460-465 flash No. 7 color	–37½	–38	36½–37½
95-100 vis. @ 210, 490-495 flash No. 8 color	–38½	–39	–38½

**Only one refiner quoting.

Market Section

CO-RE-CO

100% PURE PENNSYLVANIA OIL

PURE PENNSYLVANIA PETROLEUM PRODUCTS — TRADE MARK CORECO ESTABLISHED 1885

TO YOUR NEW-CAR CUSTOMERS!

Mr. Dealer! If your customers are purchasing new cars this year of different makes from their last cars, suggest to them that they use CORECO Motor Oil, the 100% Pennsylvania Motor Oil—exclusively. CORECO Motor Oil enables engines to give their best. You can stand back of your recommendations because this company stands back of you and CORECO Products. CORECO Motor Oil is the result of 30 years continuous refining experience.

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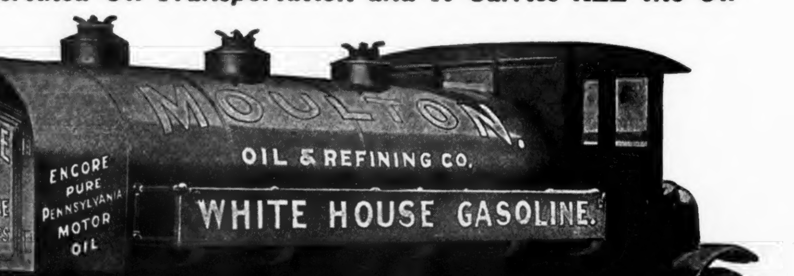

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Name.................................... Address..

Refinery Markets on Wax and Heavy Oil Products

Pennsylvania, Oklahoma, Kansas, North and South Texas, Louisiana, Arkansas, California, and New England

WAX

*PENNSYLVANIA	Prices Jan. 24	Prices Jan. 17	Prices Jan. 10
122-124 White Crude Scale.	4⅝– 4¾	4⅝– 4¾	4⅝– 4¾
124-126 White Crude Scale.	– 4¾	– 4¾	– 4¾
OKLAHOMA			
124-126 White Crude Scale.	– 4¼	4¼– 4⅜	4¼– 4⅜
CALIFORNIA			
White Crude Scale	6 – 7	6 – 7	6 – 7

*Per Pound, New York

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	6⅜– 6¾	6⅜– 6¾	6⅜– 6¾
30-34 Fuel Oil	6¼– 6½	6¼– 6⅜	6¼– 6⅜
28-30 Fuel Oil	6 – 6¼	6¼– 6⅜	6¼– 6⅜
OKLAHOMA			
38-40 Straw distillate	5 – 5¼	5⅛– 5⅜	5⅛– 5⅜
36-38 Straw distillate	4⅞– 5	5 – 5⅛	5 – 5⅛
32-36 Gas oil cracked (Gal.)	4⅜– 4½	4⅜– 4½	4⅜– 4½
32-36 uncrackedGas oil, (Gal.)	4¼– 4½	4¼– 4½	4¼– 4½
28-30 Fuel oil (Bbl.)	*1.50 –1.60	1.55 –1.60	1.50 –1.60
26-28 Fuel oil (Bbl.)	*1.30 –1.40	1.30 –1.40	1.30 –1.40
24-26 Fuel oil (Bbl.)	1.25 –1.30	1.25 –1.30	1.25 –1.30
22-26 Fuel oil (Bbl.)	1.20 –1.25	1.20 –1.25	1.20 –1.25
18-22 Fuel oil (Bbl.)	1.17½–1.20	1.17½–1.20	1.17½–1.20
16-18 Fuel oil (Bbl.)	1.17½–1.20	1.17½–1.20	1.17½–1.20
14-16 Fuel oil (Bbl.)	1.15 –1.17½	1.15 –1.17½	1.15 –1.17½

*Zero cold test material bring from 5 to 15 cents more per barrel.

KANSAS*			
38-40 straw distillate	5⅛– 5¼	5⅛– 5¼	5⅛– 5¼
36-38 straw distillate	5¼– 5⅜	5¼– 5⅜	5¼– 5⅜
32-36 Gas Oil	– 4½	– 4½	– 4½
18-22 Fuel Oil	1.25 –1.35	1.25 –1.35	1.25 –1.35
24-26 Fuel Oil	1.45 –1.55	1.45 –1.55	1.45 –1.55

*F. O. B. refinery, Kansas destination.

NORTH TEXAS			
38-40 Straw distillate	4¾– 5	5 – 5¼	5 – 5¼
32-36 Gas Oil (Gal.)cracked	4 – 4¼	4¼– 4¾	4¼– 4¾
32-36 uncracked gas oil	4 – 4¼	– 4¾	– 4¾
24-26 Fuel per (Bbl.)	1.52½–1.55	1.52½–1.55	1.52½–1.55

GULF COASTAL			
Fuel	1.55 –1.60	1.55 –1.60	1.55 –1.60
Gas Oil	5¼– 5⅜	5¼– 5⅜	5¼– 5⅜

NORTH LOUISIANA	Prices Jan. 24	Prices Jan. 17	Prices Jan. 10
32-36 Gas oil,cracked (Gal.)	– 4¾	– 4¾	– 4¾
32-36 Gas oil,uncracked(Gal.)	4¾– 5	4¾– 5	4¾– 5
16-20 Fuel Oil (Bbl.)	1.25 –1.30	1.22½–1.25	1.22½–1.25
ARKANSAS			
30-34 Gas oil	4½– 4⅝	4½– 4⅝	4½– 4⅝
32-36 Gas oil	– 4¾	– 4¾	– 4¾
Smackover Crude Fuel	1.25 –1.27½	1.25 –1.30	1.25 –1.30
CALIFORNIA*			
14-18 Fuel Oil (Bbl.)	.80 –1.00	.80 –1.00	.80 –1.00
14-18 Bunker Oil (Bbl.)	.80 –1.00	.80 –1.00	.80 –1.00
30-34 Gas Oil (Bbl.)	1.30 –1.35	1.30 –1.35	1.30 –1.35
27 + Diesel Oil (Bbl.)	1.15 –1.30	–1.15	–1.15

*(San Joaquin Valley, San Francisco 4c per bbl. more.)

NEW ENGLAND (F. O. B. Boston and Fall River)			
30-32 Gas Oil (Gal.)	– 6¼	– 6¾	– 6¼
Fuel Oil (Bunker C) Bbl.	–1.90	–1.90	1.80 –1.85

PETROLATUMS

PENNSYLVANIA (Cents Per Pound in Tank Cars)*

Snow White	7¼– 7½	8½– 9	8½– 9
Lily White	– 6¼	7½– 8	7½– 8
Cream White	– 5½	– 6½	– 6½
Light Amber	2⅝– 2¾	– 3½	– 3½
Amber	2⅜– 2½	3¼– 3½	3¼– 3½
Red	– 2⅜	– 3	– 3
Green No. 5 Color	– 1¾	1¾– 2	1¾– 2

*In barrels ¾c a pound more, carlots.

PETROLEUM COKE

OKLAHOMA (Per ton in car lots)

Lump	$5-$6	$5-$6	$5-$6
Breeze	2-2.25	2-2.25	2-2.25
Still Run	3.25-3.50	3.25-3.50	3.25-3.50

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

Jobbers Buying More At Seaboard Refineries

NEW YORK, Jan. 24.

ATLANTIC seaboard refiners reported a slight improvement in the jobbing demand for U. S. Motor gasoline regardless of the easier market in the Gulf section. Most of the refiners were asking 12 to 12½ cents a gallon for U. S. Motor in bulk at the refineries and 13 to 13½ cents a gallon in tank cars delivered to the trade.

Weather conditions were very unfavorable last week but consumption seemed to hold up fairly well. There have been rumors current of an impending break in the bulk market but with tanker rates to California still at high levels, local oil men say there is little chance of a reduction. California Motor is being laid down here at 11¾ cents a gallon, and is offered to the trade at 12 to 12½ cents a gallon, f.o.b. Upstate jobbers have been purchasing fairly steadily.

The outlook, however, appears uncertain. With Gulf prices on the decline and tanker rates at top levels, the smaller distributors are uncertain whether to purchase for spring deliveries or to take a chance and hold off a while. Gasoline tank wagon prices have been fairly steady.

Gulf refiners reported a slightly more active demand for U. S. Motor gasoline at 11¼ cents a gallon, in tank cars at the refineries and 12¼ cents a gallon, in tank cars delivered to the nearby trade. Weather conditions have been more favorable and consumption is holding up better than expected. No tank wagon price changes were announced last week.

CONSUMPTION of kerosene appears to be at its peak but demand has fallen off a little as the majority of big consumers and jobbers have already covered their nearby requirements. Prices, however, were fairly steady along the Atlantic seaboard. Prime white was quoted at 9½ cents a gallon at New York harbor refineries while 43-45 water white was steady at 9¾ cents a gallon and 10¾ cents a gallon in tank cars delivered to the trade. One refiner was offering 41-43 water white kerosene at 9 cents a gallon refinery and 10 cents a gallon in tank cars delivered to the trade.

On Monday the Standard Oil Co. of New Jersey announced a reduction of 1 cent a gallon in the tank wagon price of kerosene, throughout its territory. On Thursday the Standard Oil Co. of New York reduced the kerosene tank wagon price 1 cent throughout New York and New England.

Conditions in the Gulf coast kerosene markets failed to show any improvement. Domestic buying has been light and spasmodic and water white 41-43 gravity was offered freely at 7½ cents a gallon, at the refineries and 8½ cents a gallon in tank cars delivered to the nearby trade.

Chemists Develop New Vapor Tension Test

Staff Special

TULSA, Jan. 22.—Charles P. Biestele, chief chemist, and Paul W. Prather, assistant chief chemist of the Bureau of Explosives, have worked out a new method for testing the vapor tension of natural gasoline. The method is suggested to replace the present test which is considered inaccurate by both the industry and the Bureau of Explosives.

The technical committee of the Association of Natural Gasoline Manufacturers will make a series of tests on the new method in the near future and make a report to the special technical committee of the American Petroleum Institute on its findings.

Market Section

Chicago Resale Market Quiet; Snow Restricts Consumption

CHICAGO, Jan. 22.

JOBBERS buying 58-60 U. S. Motor gasoline in the open market this week were in a position to obtain it in Chicago at an eighth to a quarter of a cent below the Group 3 price, although Oklahoma refiners furnish the bulk of gasoline for this territory. Chicago offices of two refiners were quoting U. S. Motor gasoline at 8¾ cents, and a number of carload marketers were offering material at the same figure.

Most of the refiners here were quoting 9½ cents on U. S. Motor gasoline, and the president of one company made a survey of Chicago offices during the middle of the week and decided that his price would be unchanged at 9½ cents. Both of the refiners quoting under 9 cents, which was reported as the bottom of the Oklahoma market by Tulsa representatives of several Chicago marketers and refiners, said they were meeting competition.

Gasoline demand, both for U. S. Motor and the higher gravities, was quiet during the week. Weather conditions throughout the major portion of the territory were not favorable to consumption. Snow blocked many roads in the Chicago district and in the northwestern states. A fact which illustrates this condition is seen in the report of a marketer who has a customer in Wisconsin who usually sells a tank car weekly but up to Wednesday this week had disposed of less than 200 gallons. The trade reported that price was not a factor in jobber buying but that demand from the public was slack.

High test gasoline prices showed little change this week. The 60-62, 400 e.p. gasoline was 9¾ to 10 cents with a slight firming to 10 cents today, while the 60-62 gravity gasoline with end point up to 437 was a quarter of a cent above U. S. Motor, or 9 to 9¼ cents. The 64-66, 375 e.p. gasoline sold at 10¾ to 11 cents early in the week but was pegged at 10¾ cents beginning Wednesday, and the 68-70, 350-360 e.p. grade was 11¼ to 11½ cents over the week.

Kerosene, also, was quiet, and the 41-43 w.w. material which opened the week slightly above 6 cents settled to a range of 5⅞ to 6 cents after Tuesday.

Cold weather, which brought zero and sub-zero temperatures in the northwest, did not cause a reaction in the furnace oil market. Prices on the distillates and gas oils were unchanged over the week, 38-40 straw distillate being 5⅛ to 5¼ cents, 36-38 straw distillate 5 to 5⅛ cents, 32-36 straw gas oil zero cold test 4⅞ to 5 cents, and the 32-36 dark gas oil was 4⅜ to 4⅝ cents with low cold test stocks commanding the higher price.

Several industrial fuel inquiries for February requirements were circulated this week, the trade reported, and more are expected early next week. Prices closed the week unchanged. The 18-22 fuel was $1.20 to $1.22½; 22-26 grade $1.25; 24-26 fuel $1.27½ to $1.32½; and the 28-30 fuel low cold test sold at $1.60 to $1.65. Smackover was $1.25 to $1.30.

Seasonal temperatures have been predicted for the first part of next week in the Chicago forecast district, with continued seasonal readings later in the week in the southern portion while the northern portion will have slightly lower temperatures after mid-week. Most fair weather is forecast with possible brief periods of precipitation.

EAST AURORA, N. Y.—The Central Filling Station here was acquired on Jan. 1 by Edward, LaVerne and Clifford Ernst. Besides Emco gasoline and oils, a line of automobile accessories will be handled.

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Petroleum Markets-Every Day

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CLEVELAND—880 Caxton Bldg.

Week's Price Changes Tank Wagon Market

Gasoline Changes

Standard of New York—T.w. and s.s. prices of gasoline advanced 1 cent, Syracuse, to 21 cents t.w., and Boston cut 1 cent, to 19 cents t.w., **Jan. 10.**

* * *

Standard of Indiana—In the general 1 cent gasoline reduction on Jan. 12, another point besides Minneapolis, Des Moines and Sioux City which remained unchanged was Grand Forks, N. D. Prices there should be 22 cents t.w., and 24 cents s.s., including 2 cent tax.

S.s. price of gasoline at St. Louis was incorrectly shown in Jan. 19 issue as 20.6 cents. It should have been 20.9 cents, there being a spread of 2.3 cents between t.w. and s.s. prices.

* * *

Kerosene Changes

Standard of New York—Kerosene reduced 1 cent generally through territory, **Jan. 20.** Kerosene at Buffalo had been reduced 4 cents, to 14 cents t.w., **Jan. 13.** Boston kerosene price is unchanged at 15 cents.

Spot Gasoline is Quiet In Pennsylvania

CLEVELAND, Jan. 24.—Spot gasoline market in western Pennsylvania is quiet but shipments on contracts and to regular customers is considered fair in view of heavy snows which have bound much of the consuming territory. Kerosene demand is steady but prices are now virtually universal at the bottom of the price range quoted a week ago.

Viscous neutrals are still sold up and only one carload of spot 200 viscosity No. 3 color oil was heard of last week. This car moved at 30½ cents for resale. Neutrals are being moved as fast as made and billings are at 25 to 26 cents for 150 viscosity No. 3 color, 29 cents for 180 vis., and 31 cents for 200 vis., refiners report. Some minor variations for goods bought last year may be made but the foregoing prices represent the bulk of the current movement, according to best reports.

Cylinder stock demand is fair. Bright stocks are steady. Long residuum stocks are quoted ½ cent a gallon lower than a week ago. Waxes are steady.

Marketing Man Starts Own Business

MORRISTOWN, N. J.—The Morris County Oil Co. has been organized here by Harry M. Hobson, who was for many years with the Vacuum Oil Co. in its industrial oil department, and later with The Texas Co. and the Pure Oil Co. The company is distributor for the Pure company in northern New Jersey.

A bulk station has been completed and a tank truck on a Reo chassis is making deliveries of Purol gasoline and Tiolene motor oil.

Tank Wagon, Service Station Markets for Gasoline and Kerosene In United States Territories and Canada

These Prices in Effect Jan. 24, 1927

S. O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	18	0	18	*	15
Newark, N. J.	18	0	18	20	15
Annapolis, Md.	18	2	20	*	15
Baltimore, Md.	18	2	20	23	10
Cumberland, Md.	18	2	20	23	15
Washington, D. C.	18	2	20	23	13
Danville, Va.	18	4½	22.5	*	15
Norfolk, Va.	18	4½	22.5	25.5	15
Richmond, Va.	18	4½	22.5	25.5	15
Roanoke, Va.	18	4½	22.5	25.5	15
Petersburg, Va.	18	4½	22.5	25.5	15
Williamsburg, Va.	18	4½	22.5	*	15
Charleston, W. Va.	18	3½	21.5	24.5	15
Clarksburg, W. Va.	18	3½	21.5	24.5	15
Keyser, W. Va.	18	3½	21.5	*	15
Parkersburg, W. Va.	18	3½	21.5	24.5	15
Wheeling, W. Va.	18	3½	21.5	24.5	15
Charlotte, N. C.	19	4	23	26	15
Hickory, N. C.	19	4	23	*	15
High Point, N. C.	19	4	23	*	15
Mt. Airy, N. C.	19	4	23	26	15
Salisbury, N. C.	19	4	23	26	15
Charleston, S. C.	19	5	24	27	15
Columbia, S. C.	19	5	24	27	15

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

*New York City	21	0	21	25	17
Albany, N. Y.	19	0	19	21	17
Buffalo, N. Y.	18	0	18	21	14
Rochester, N. Y.	18	0	18	22	14
Syracuse, N. Y.	19	0	19	21	17
Boston, Mass.	19	0	19	21	15
Augusta, Me.	21	3	24	27	17
Manchester, N. H.	21	2	23	25	17
Burlington, Vt.	21	2	23	25	17

*In steel barrels.

ATLANTIC REFINING

Pittsburgh, Pa.	18	*	18	*23	16
Philadelphia, Pa.	18	*	18	*23	16
Allentown, Pa.	18	*	18	*23	16
Erie, Pa.	18	*	18	*23	16
Scranton, Pa.	18	*	18	*23	16
Altoona, Pa.	18	*	18	*23	16
Dover, Del.	18	2	20	23	16
Wilmington, Del.	18	2	20	23	16
Providence, R. I.	19	1	20	22	18
Boston, Mass.	19	0	19	21	15
Springfield, Mass.	19	0	19	21	18
Worcester, Mass.	19	0	19	21	18
Hartford, Conn.	19	2	21	24	17
New Haven, Conn.	19	2	21	24	18

*2-cent state tax is collected by retail dealer and paid by him directly to state.

S. O. KENTUCKY

Lexington, Ky.	18	5	23	26	17
Louisville, Ky.	17	5	22	25	17
Covington, Ky.	18	5	23	26	17
Clarksdale, Miss.	16	4	20	23	14.5
Gulfport, Miss.	††17.5	4	††21.5	24.5	15
Jackson, Miss.	16	4	20	23	15.5
Natchez, Miss.	15.5	4	19.5	22.5	15
Vicksburg, Miss.	15.5	4	19.5	22.5	15
Birmingham, Ala.	18	4	22	25	17.5
Mobile, Ala.	17	4	21	24	16
Montgomery, Ala.	*19	4	23	26	*18.5
Atlanta, Ga.	†16	3½	20	23	18
Augusta, Ga.	†16	3½	20	23	17
Macon, Ga.	†16	3½	20	23	18
Savannah, Ga.	†16	3½	20	22	16
Jacksonville, Fla.	14	4	18	21	16
Miami, Fla.	16	4	20	23	17.5
Tampa, Fla.	14	4	18	21	16
Pensacola, Fla.	**15	4	**19	22	16.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia has ½ cent per gal. inspection fee on gasoline which is deducted as well as the state gasoline road tax of 3½ cents, to get the actual net tank wagon market to dealer.

**Both tank wagon prices include 1c city tax at Pensacola, which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include special Sea Wall tax of 2c.

S. O. INDIANA

	Gasoline T.W.	Tax	**Total T.W.	S.S.	Oil T.W.
Chicago, Ill.	17	0	17	19	13
Decatur, Ill.	17.2	0	17.2	19.2	13.6
E. St. Louis, Ill.	16.1	0	16.1	18.35	12.7
Joliet, Ill.	17.4	0	17.4	19.4	13.8
Peoria, Ill.	17.2	0	17.2	19.2	13.6
Quincy, Ill.	17.2	0	17.2	19.2	13.4
Indianapolis, Ind.	17.2	3	20.2	22.2	14.2
Evansville, Ind.	17	3	20	22	14
South Bend, Ind.	17.4	3	20.4	22.4	14.4
Detroit, Mich.	17.8	2	19.8	21.8	14.7
Grand Rapids, Mich.	17.7	2	19.7	21.7	14.6
Saginaw, Mich.	17.9	2	19.9	21.9	14.8
Green Bay, Wis.	17.6	2	19.6	21.6	13.4
Madison, Wis.	17.3	2	19.3	21.3	13.1
Milwaukee, Wis.	17.1	2	19.1	21.1	12.9
La Crosse, Wis.	18.2	2	20.2	22.2	14
Minneapolis, Minn.	15.2	2	17.2	19.2	13.9
Duluth, Minn.	18.5	2	20.5	22.5	13.9
Mankato, Minn.	18.1	2	20.1	22.1	13.7
Des Moines, Iowa	16	2	18	20	13.5
Davenport, Iowa	17.5	2	19.5	21.5	13.5
Sioux City, Iowa	12.9	2	14.9	16.9	13.1
Mason City, Ia.	17.5	2	19.5	21.5	13.5
St. Louis, Mo.	*16.6	2	18.6	20.9	12.6
Kansas City, Mo.	†17.9	2	19.9	21.9	11.9
St. Joseph, Mo.	†17.5	2	19.5	21.5	12.5
Fargo, N. D.	19.9	2	21.9	23.9	15.9
Grand Forks, N. D.	20	2	22	24	16.2
Minot, N. D.	19.9	2	21.9	23.9	15.9
Pierre, S. D.	18.5	3	21.5	23.5	14.9
Huron, S. D.	18.5	3	21.5	23.5	14.9
Wichita, Kans.	15.8	2	17.8	19.8	11.8
Bartlesville, Okla.	15.8	3	18.8	20 8	11.8

**Dumps of 50 gallons or more, 1c discount through territory, except in Chicago where 1c discount applies on dumps of 100 gallons or more.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. NEBRASKA

Omaha, Neb.	14.25	2	16.25	20.25	13.25
McCook	18.75	2	20.75	22.75	14.75
Norfolk	17	2	19	21	13.75
North Platte	18.75	2	20.75	22.75	14.5
Scottsbluff	18.25	2	20.25	22.25	14

CONTINENTAL OIL

Denver, Colo.	18	2	20	21	15.5
Pueblo, Colo.	15	2	17	19	13.5
Grand Junction, Colo.	21.5	2	23.5	25.5	19
Casper, Wyo.	18	2½	20.5	22.5	14
Cheyenne, Wyo.	19	2½	21.5	23.5	15.5
Butte, Mont.	19	3	22	22	19
Helena, Mont.	22	3	25	27	19
Salt Lake City, Utah.	20.5	3½	24	26	17
Boise, Ida.	22.5	3	25.5	27.5	19
Twin Falls, Ida.	22.5	3	25.5	27.5	19
Albuquerque, N. M.	20	3	23	26	18

S. O. CALIFORNIA

Phoenix, Ariz.	19	3	22	25	21.5
Los Angeles, Cal.	13.5	2	15.5	18.5	15.5
Fresno, Cal.	14	2	16	19	16.5
San Francisco, Cal.	14	2	16	19	15.5
Reno, Nev.	18	4	22	25	19
Portland, Ore.	14	3	17	20	16.5
Seattle, Wash.	14	2	16	19	16.5
Spokane, Wash.	18	2	20	23	20.5
Tacoma, Wash.	14	2	16	19	16.5

S. O. LOUISIANA

Little Rock, Ark.	15	4	19	22	13
Alexandria, La.	15	2	17	20	†15
Baton Rouge, La.	14	2	16	19	†13.5
Lake Charles, La.	15.5	2	17.5	20.5	†15
New Orleans, La.	*15.5	2	17.5	20.5	†15
Shreveport, La.	14	2	16	19	†14
Lafayette, La.	15	2	17	20	†14.5
Bristol, Tenn.	17.5	3	20.5	23.5	15.5
Chattanooga, Tenn.	17.5	3	20.5	23.5	13.5
Knoxville, Tenn.	17.5	3	20.5	23.5	16
Nashville, Tenn.	16	3	19	22	16
Memphis, Tenn.	15	3	18	21	15

*Includes 1c parish tax on gasoline.

†Kerosene prices in Louisiana include 1c state tax.

S. O. OHIO

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
All Ohio points	19	2	21	23	17

MAGNOLIA PETROLEUM

Muskogee, Okla.	15	3	18	21	11
Oklahoma City	15	3	18	21	13
Tulsa, Okla.	15	3	18	21	13
Fort Smith, Ark.	15	4	19	22	13
Little Rock, Ark.	15	4	19	22	13
Texarkana, Ark.	†19	4	††23	†*23	15
Dallas, Tex.	†16	1	†17	†17	13
Fort Worth, Tex.	††14	1	††15	††15	13
Houston, Tex.	†18	1	†19	†19	13
San Antonio, Tex.	†16	1	†17	†17	14
El Paso, Tex.	**18	1	**19	**19	16

*Within city of Texarkana, Ark., the state tax on gasoline is 1c per gal. conforming with the Texas state tax. In Texarkana district outside of the city the 4c state tax applies.

†3c per gal. discount to dealers.

**2c per gal. discount to dealers at El Paso.

††1c per gal. discount to dealers at Fort Worth.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.& P Naphtha	Cleaner Naphtha
Chicago	18	20	20
Detroit	19.7	21.7	21.7
Kansas City	18.2	20.2	20.2
Milwaukee	18.7	*22.7	*22.7
Minneapolis	*22	*24	*24
St. Louis	17.9	19.9	19.9
New York	...	21	....

*Includes 2c state tax.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Toronto	24.5	3	27.5	31	24
Ottawa	24.5	3	27.5	31	24
Cochrane	31.5	3	34.5	40	29
Ft. William	25.5	3	28.5	32	26.5

MANITOBA

Winnipeg	27.5	3	30.5	34	26.5

SASKATCHEWAN

Regina	30.5	0	30.5	35	29.5

ALBERTA

Edmonton	29.5	2	31.5	35	28.5
Calgary	27.5	2	29.5	33	26.5

BRITISH COLUMBIA

Vancouver	22	3	25	29	25

QUEBEC

Montreal	24.5	3	27.5	31	24
Quebec City	26.5	3	29.5	33	26
Three Rivers	26.5	3	29.5	33	26

NEW BRUNSWICK

St. John	27.5	3	30.5	38	27
Moncton	27.5	3	30.5	35	27

NOVA SCOTIA

Halifax	27.5	3	30.5	35	27
Sydney	29.5	3	32.5	37	29

PRINCE EDWARD ISLAND

Charlottetown	27.5	3	30.5	34	27

Note: In districts surrounding these points 1c additional is added to city price.

Foreign Demand For All Products Lags; Russian and Asiatic Oils a Factor

By Special Correspondent
NEW YORK, Jan. 24

FURTHER weakening in gasoline prices at the Gulf featured the export markets last week. European demand for all kinds of petroleum products lagged and in most cases prices showed a downward tendency. Prime and water white kerosene were also weaker. Russian oil is flooding many of the large European centers and competition abroad is very keen.

Paraffin waxes were slightly lower. One of the big Asiatic refiners has been shipping large quantities of wax to Europe and consequently domestic refiners report a slump in demand. Gas oil was quiet. Bunker oil however was fairly firm. Lubricating oils were steadier.

Export Gasoline—New York

Export demand for bulk gasoline failed to show any improvement last week. Most refiners reported a dearth of foreign inquiries. Apparently many of the big European marketers have already covered their spring requirements while those who have not already done so are holding off pending lower prices over here.

U. S. Motor was held at 12 to 12½ cents a gallon at the refineries. No price shading was reported, although early in the week the Standard Oil Co. of New Jersey announced a reduction of a half cent a gallon in the price of cased gasoline, bringing the figure down to 27.40 cents a gallon, in cases. It was reported that a leading refiner had sold 45,000 cases of U. S. Motor and 64-66 gravity 375 end point gasoline for February shipment to the Far East. The prices were not disclosed.

Export Gasoline—Gulf Ports

Gulf gasoline export prices resumed the downward trend last week. There was very little buying interest manifested by the big European buyers. However, one of the leading Independent refiners sold a part cargo of 20,000 barrels of 62-64 gravity gasoline and prime white kerosene at 12⅝ cents and 7⅞ cents a gallon respectively for February shipment to France.

On Saturday, U. S. Motor was offered at 10½ to 10¾ cents a gallon; 60-62 gravity 400 end point at 11¼ to 11½ cents a gallon; 61-63 gravity, 390 end point at 11¾ cents a gallon and 64-66 gravity, 375 end point at 12¾ cents a gallon. The slump in the Mid-Continent was held largely responsible for the decline in export prices. Foreign buyers showed a disposition to hold off and see what happens. Cased gasoline was also lower. U. S. Motor in cases was quoted at $2.05 in cargo lots while 64-66 gravity 375 end point was offered at $2.25 a case, in cargo lots. Cased gasoline business was lighter and spasmodic.

Export Kerosene—New York

Export kerosene was easier. Foreign buyers were content with purchasing hand-to-mouth and 41-43 water white kerosene was freely offered around at 9 cents a gallon. However, 43-45 W.W. was steady at 9¾ cents a gallon. There was an inquiry from the United Kingdom for 30,000 barrels of prime and water white with U. S. Motor gasoline for February shipment but this is still pending. Continental buyers have been purchasing barreled kerosene a little more freely but have been showing little interest in bulk goods. Cased kerosene demand was more active. A leading Independent refiner sold 20,000 cases of prime and water white for February shipment to China but the prices were not disclosed. The asking price for 43-45 water white in cases was 19.15 cents a gallon while 42-44 standard white was quoted at 18.65 cents a gallon, a reduction of a half cent from the previous week's price.

Export Kerosene—Gulf Ports

Prime white showed an easier tendency and business was done in some cases at 7⅞ cents a gallon, although most of the refiners were asking 8 cents a gallon. Water white was in better demand than during the previous week and the price was quoted at 9¼ cents for 43-45, in bulk. A French buyer was reported in the market for 40,000 barrels of prime and water white kerosene along with 64-66 gravity gasoline but this did not materialize. Cased kerosene was lower. Prime white was more freely offered at $1.65 a case and water white at $1.80 a case in cargo lots compared with $1.75 and $1.85 per case respectively, the previous week. A leading Independent has closed an order for 25,000 cases of prime and water white for nearby shipment to Australia. The prices were not disclosed.

Lubricating Oils—New York

Export demand for lubricating oils was a little more active last week. European buyers have been reluctant to purchase in cargo quantities but orders for from 300 to 600 barrels have been more numerous. The advance in Pennsylvania crude and the corresponding stiffening in Pennsylvania lubricating oils brought forth a much better demand from France and the United Kingdom. Pennsylvania cylinder stocks were firmer and 600 s. r. unfiltered in barrels, New York was held at 19½ cents a gallon. Bright stocks were also in better demand.

Lubricating Oils—Gulf Ports

Gulf refiners reported a steady market for zero cold test lubricants. Foreign buyers were operating on a slightly larger scale than at the beginning of the month. Price fluctuations were very narrow last week. It was rumored that a leading refiner was negotiating for the sale of 40,000 barrels of assorted lubricating oils to a United Kingdom buyer, for March shipment. Domestic consumption of zero pour test oils has been fully up to expectations.

Bunker Oil—New York

Although little spot business was transacted last week, this market was firm at $1.75 a barrel for grade C at the refineries and $1.81½ f. a. s. New York harbor. Most of the 1927 contracts were closed last month, and there is considerable oil being delivered. The firmer market in the Gulf has improved local sentiment but no advances in price are looked for. Diesel oil demand was a little more active but, as in bunker oil, the movement was mainly against contracts.

Bunker Oil—Gulf Ports

Bunker oil continued to strengthen last week. Export demand was very

Exports from Tampico District

Company	November	December
Transcontinental Petroleum Co., (Standard of New Jersey)	1,137,471	916,456
Pan American Eastern Oil Co.	2,259,223	1,915,361
Mexican Eagle Oil Co., (El Aguila)	448,359	1,258,800
Cia. Mexicana Holandesa "La Corona"	422,557	395,012
The Texas Co. of Mexico, S. A.	78,254	27,384
Mexican Gulf Oil Co.	378,620	241,017
Sinclair Mexican Companies	263,244	485,888
East Coast Oil Co. of Mexico, S. A., (Southern Pacific)	113,319	57,923
Mexican Oil Products Co.	.....	23,757
Pierce Oil Corp.	108,387	62,355
Mexican Atlas Oil Co.	49,374	71,740
New England Fuel Oil Co.	41,454	41,437
Empire Gas & Fuel Co.	125,018	.....
Panuco Boston Oil Co.	.....	97,826
La Espuela Oil Co.	.....	17,734
Totals	5,425,280	5,612,690

light but domestic buying has been on a larger scale and the price for bunker C was well held at $1.65 a barrel. In cargo lots the price ranged from $1.51 to $1.55 a barrel f. o. b. New Orleans. At Tampico, bunker C was $1.55 a barrel including taxes. No cargo offerings were reported. Heavy Panuco crude was nominal at $1.40 a barrel, taxes to be added.

Wax Market—New York

Wax demand slumped again last week and prices were reduced for virtually all descriptions. A large British owned Asiatic refinery is reported to be turning out large quantities of wax and is flooding Europe with cheap offerings. One dealer went so far as to say that this company is breaking the world's markets.

Domestic demand for wax has failed to show any improvement. Stocks are large and sellers report keener competition. White crude scale was a trifle more active than the fully refined grades but demand was very light. Match wax was also neglected.

Wax Market—Gulf Ports

The Gulf wax markets were very quiet and a shade lower last week. Foreign buyers showed a minimum of interest and no export business worth mentioning developed. Domestic demand was mainly of a hand-to-mouth nature. Some of the large Catholic countries were inquiring for both fully refined and white crude scale wax but purchased little or nothing. At the close of the week white crude scale 124-126 A.m.p. was offered freely at 4.40 cents a pound while 124-126 A.m.p. semi-refined was weak at 4½ cents a pound. The asking price for fully refined waxes were as follows: 123-125 and 125-127 A.m.p. 4.90 cents; 128-130 A.m.p. 5 cents; 133-135 A.m.p. 5¾ cents and 135-137 A.m.p. 6 cents.

Gas Oil—New York

Export demand for gas oil showed a slight improvement but was still below expectations and prices were soft. Most of the big buyers appeared content with purchasing as needed while foreign buying was mainly hand-to-mouth. Local prices were weak and 36-40 was quoted at 6¼ cents a pound while 28-34 was offered freely at 5¾ cents a gallon. Stocks of gas oil were large and some observers say buyers were holding off for lower prices. Much of the domestic demand has been covered. No export inquiries for bulk quantities were reported last week.

Gas Oil—Gulf Ports

The Gulf gas oil markets ruled dull and easier last week owing to the slump in foreign and domestic buying. There were numerous rumors of bulk sales current but no confirmed cargo sales were reported. Stocks of gas oil were large. The asking price for 32 plus dark gas oil was 4⅞ cents a gallon while straw colored was offered at 5 cents a gallon. Rumor had it that a large German buyer was inquiring for 30,000 barrels of translucent gas oil but this was not confirmed.

Complete Export Markets

New York Export Market

GASOLINE	Jan. 24	Jan. 17
U. S. Motor Tank cars Ref...	12 -12¼	12 -12⅛
U. S. Motor cases	27.40	-27 90
California grade U. S. Motor F. O. B. N. Y. Cargoes	11¼-11¾	11⅛-11¾

KEROSENE		
43-45-150 W. W. Tank cars Ref.	09¾	-09¾
41-43 Water White Bulk Ref.		-09.
43-45-150 W. W. Cases	19 15	-19.65
42-44-110 S. W. Cases	18.65	-19.15

GAS OIL		
36-40, Bulk Refinery	-06¼	-06¾
28-34, Bulk Refinery	-05¾	-05¾

MEXICAN BUNKER OIL		
Grade C. f. o. b. ref. Bulk	-1.75	-1.75
Diesel Oil f. o. b. ref. Bulk	-2.40	-2.40

LUBRICATING OILS

The following prices are cooperage basis f. o. b. New York, products being manufactured by inland refineries.

CYLINDER OILS (Bbls.)

1 inch Immersion Test; All Penna. Products

Bright Stock dark	-43½
Filtered D 600	-34½
Filtered E 600-Warren	-29
Unfiltered 600 s. r.	-19½
Unfiltered 650 s. r.	-24
600 Flash s. r.	-27½
650 Flash	-38

RED PARAFFIN (Bbls.)

(Viscosity at 70)			
300 vis.	No. 5 color	-19½	-19½
250 vis.	No. 5 color	-18	-18
475 Viscosity	No. 5 color	-24	-24

NEUTRAL OILS (Bbls.)

(Viscosity at 70)			
200 vis. at F. Pale	No. 3 color	-38	-38
180 Pale	No. 3 color	-36	-35
150 Pale	No. 3 color	-33	-32

BLACK OIL (Bbls.)		
25-30 cold test	13¾	-13¾
15 cold test	14¾	-14¾

MEDICINAL OILS

(Includes Price of Drums)
(Penna. Stocks)

	Jan. 24	Jan. 17
Domestic 875-885 s. g.	- .85	- .85
Domestic 865-.870 s. g.	.75- .80	.75- .80
Russian 885-.890 s. g. 325-330 vis.	1.00-1.10	1.00-1.10

WAXES

(Penna. Stocks)
(In Cents per Pound, F. A. S. Carload Lots)

WHITE CRUDE SCALE (Shipped in Bbls.)		
122-124 A. m. p.	-4¾	-4¾
124-126 A. m. p.	-4.70	-4.70

MATCH		
105-108 A. m. p.	.05¾	.05¾

FULLY REFINED (Shipped in Burlap Bags)		
123-125 A. m. p. Philadelphia.	-05	-05¼
125-127 A. m. p.	-05	-05¼
128-130 A. m. p.	-05⅛	-05½
130-132 A. m. p.	-05½	-05¾
133-135 A. m. p.	-05⅞	-06
135-137 A. m. p.	-06⅛	-06⅛

YELLOW CRUDE SCALE		
124-126 A. m. p.	.04¾	-04½

PETROLATUMS

(Penna. Stocks)
Per Pound

Dark Green	01¾	01¾
Veterinary	02	02
Light Amber	03¾	03¾
Dark Amber	03¾	03¾
Cream	06	06
Lily White	07¾	07¾
Snow White	08¾	08¾

Gulf Export Market

GASOLINE
F. O. B. Seaboard
(Shipments of 20,000 Bbls. and over)

	Jan. 24	Jan. 17
U. S. Motor, Bulk	10½	-.10¾
60-62 400 c. p. Bulk	11¼	-.11½
61-63 390 c. p. Bulk	11¾	-.11¾
64-66 375 c. p. Bulk	12¾	-.12¾
U. S. Motor, Cases (cargo lots	2.05	2.15
64-66 Cases (cargo lots)	2.25	2.35

KEROSENE		
Water White, 43-45 bulk	09¼	-09¼
Prime White, 41-43 Bulk	08	-08
Water White, cases (cargo lots)	1.80	1.85
Prime White, cases (cargo lots)	1.65	1.75

DOMESTIC GAS AND BUNKER OIL		
26-28, gravity, Bulk*	.05	-05
32 plus, bulk, Dark	04¼	-04¼
Grade C, Bunker oil	1.65	-1.65
Cargoes	1.55	-1.55

*Translucent through neck of a 4 oz. bottle.

MEXICAN CRUDE AND BUNKER OILS
F. O. B. Steamer Tampico

Heavy, Panuco crude Taxes to be added	1.40	nomina
Grade C, Bunker oil Taxes paid cargoes	nominal	nominal
Grade C, Bunker oil, F. O. B. Tampico, For Bunkering Purposes, taxes paid	1.55-1.60	-1.55

SOUTH TEXAS
(Viscosity at 100° F; cold test 0)
(Tanker, F. O. B. Houston)

*LUBRICATING OILS	Jan. 24	Jan. 17
100 Vis. No. 2 Unfiltered Pale	08	08
150 Vis. No. 2½ Unfiltered Pale	10	10
200 Vis. No. 3 Unfiltered Pale	10½	10½
300 Vis. No. 3 Unfiltered Pale	12	12
500 Vis. No. 3½ Unfiltered Pale	14	14
200 Vis. No. 5½ Red Oil	09½	09½
300 Vis. No. 5½ Red Oil	10½	10½
500 Vis. No. 6 Red Oil	12	12

*These prices are entirely nominal owing to wide fluctuations.

Pacific Export Market

(Cargo lots quotations at seaboard, Los Angles Gravity test on A. P. I. scale)

	Jan. 24	Jan. 17
Gasoline, U. S. Motor— 53°-55°	8½- 9	08½- 9
Gasoline, U. S. Motor— blends and special cuts	9¼-10	9¼-10
Gas Oil, 30°—34° per bbl	$1.22½-1.30	1.30-1.35
Diesel Oil, 27°—plus per bbl	$1.00-1.15	1.00-1.15
Bunker Oil, 14°—18° bbls	$ .80-1.00	.80-1.00
Fuel Oil, 14°—18° per bbl	$ .80-1.00	.80-1.00
Kerosene, W. W. 38°—40° per gal., 125-150 flash test	.05½-06	.05½- .06
Cased Goods		
Gasoline, U. S. Motor	$2.25	-2.25
Kerosene, W. W. 38°—40° per case, 125-150 flash	$1.45-1.55	$1.45-1.55

N. Y. Domestic Market

The following light oil, gas and fuel oil prices are F. O. B. New York refineries, being products made from Domestic (including California) and Mexican Crudes.

	Jan. 24	Jan. 17
U. S. Motor Gasoline, Tank Cars Delivered greater N.Y.	13 -13½	13 -13½
U. S. Motor Gasoline, Tank Cars Bayonne	12 -12½	12 -12½
U. S. Motor Tank Cars, *Atlantic Seaboard Terminals	12 -12½	12 -12½
Kerosene, 44 150 W. W. Tank Cars de'd greater N.Y.	-10¾	-10¾
41-43, Bulk Ref.	-09	-09
Grade C Bunker f. o. b. N. Y. Ref	-1.75	-1.75
Diesel Oil f. o. b. Refinery	2.40	2.40
Gas Oil, 36-40, Bulk Refinery	-06¼	-06¾
Gas Oil, 28-34, Bulk Refinery	-05¾	-05¾
Furnace Oil, 38-42, Bulk, Refinery	-07½	-07½

*New York, Philadelphia, Portsmouth, Va., Charleston, S. C.

Crude Oil Prices, as Posted by Major

EASTERN FIEL DS

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District)	$3.40
Bradford District Oil in National Transit Lines (Bradford District)	3.40
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	3.30
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	3.30
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.25
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	3.10
Keister Grade in National Transit Lines (Butler Co.)	1.80
Cabell Grade in Eureka Pipe Lines (West Virginia)	2.10
Corning Grade in Buckeye Pipe Lines (Ohio)	2.25
Corning, O. heavy grade	2.15
*Somerset Medium in Cumberland Pipe Lines (Kentucky)	2.20
*Somerset Light in Cumberland Pipe Lines (Kentucky)	2.35
Ragland Grade in Cumberland Pipe Lines (Kentucky)	.95

*Somerset oil run prior to Oct, 1, 1922 takes price of 6 cents lower than above quotations.

(Posted by Stoll Oil Refining Co.)

Oil City Ky. oil in Stoll lines	$2.35

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Wooster	$2.25	Plymouth	$1.63
Lima	2.21	WesternKentucky	1.83
Waterloo	1.35	*Canadian Petrolia	2.61
Indiana	1.98	*Oil Springs	2.68
Princeton	2.10	*Posted by Imperial Oil Ltd.	
Illinois	2.10		

OKLAHOMA, KANSAS And NORTH TEXAS

Prices of Prairie Oil & Gas Co.
(In Oklahoma, Kansas, North and East Central Texas)

Effective Nov. 17, 1296

28-28.9	$1.50	34-34.9	$1.80
29-29.9	1.55	35-35.9	1.85
30-30.9	1.60	36-36.9	1.90
31-31.9	1.65	37-37.9	1.95
32-32.9	1.70	38-38.9	2.00
33-33.9	1.75	39-39.9	2.05
40-40.9	$2.10	47-47.9	$2.45
41-41.9	2.15	48-48.9	2.50
42-42.9	2.20	49-49.9	2.55
43-43.9	2.25	50-50.9	2.60
44-44.9	2.30	51-51.9	2.65
45-45.9	2.35	52 and above	2.70
46-46.9	2.40		

Above schedule met by Sinclair and Gulf on Nov. 17.

Humble Oil & Refining Co. Prices
(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

On Nov. 1, Humble first posted the price schedule adopted by Prairie on Nov. 17, except that Humble is paying 5c less for each degree of gravity on oil below 28°.

Mirando, Tex	$1.25

The Texas Co. posted same gravity and price schedule in Oklahoma, North, North Central and Central Texas on Nov. 5 as Humble, excepting it is paying $1.40 for all oil below 28° gravity in Texas fields.

Magnolia Petroleum Co.
(In Oklahoma, Kansas and North and East Central Texas)

Same grades and prices as posted by Prairie excepting that Magnolia is paying $1.30 for all oil below 28° gravity, effective Nov. 2.

Corsicana heavy	$1.25
Iatan, Tex	1.50

Carter Oil Co.
(Oklahoma and Kansas)

On Nov. 2, Carter posted same gravity and price schedule as Prairie is now maintaining.

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Hutchinson, and Carson Counties	$1.25		
Gray County:		Wheeler County:	
28-28.9	$1.00	28-28.9	$ .90
29-29.9	1.05	29-29.9	.95
30-30.9	1.10	30-30.9	1.00
31-31.9	1.15	31-31.9	1.05
32-32.9	1.20	32-32.9	1.10
33-33.9	1.25	33-33.9	1.15
34-34.9	1.30	34-34.9	1.20
35-35.9	1.35	35-35.9	1.25
36-36.9	1.40	36-36.9	1.30
37-37.9	1.45	37-37.9	1.35
38-38.9	1.50	38-38.9	1.40
39-39.9	1.55	39-39.9	1.45
40-40.9	1.60	40-40.9	1.50
41-41.9	1.65	41-41.9	1.55
42-42.9	1.70	42-42.9	1.60
43-43.9	1.75	43-43.9	1.65
44 and above	1.80	44 and above	1.70

Magnolia Petroleum Co. posted flat price of $1.25 for all Panhandle Crude on Sept. 22, and Kay County Gas Co. on Oct. 4.

WEST TEXAS

(Crane, Upton and Crockett Counties)

Humble Oil & Refg. and Kay County Gas Co.

Below 26	$ .80	31-31.9	$1.10
26-26.9	.85	32-32.9	1.15
27-27.9	.90	33-33.9	1.20
28-28.9	.95	34-34.9	1.25
29-29.9	1.00	35-35.9	1.30
30-30.9	1.05	36 and above	1.35

NORTH LOUISIANA—ARKANSAS FIELDS

***Prices of Standard Oil Co. of Louisiana**
Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton and De Soto
Effective Nov. 4

Below 28	$1.40	40-40.9	$2.10
28-28.9	1.50	41-41.9	2.15
29-29.9	1.55	42-42.9	2.20
30-30.9	1.60	43-43.9	2.25
31-31.9	1.65	44-44.9	2.30
32-32.9	1.70	45-45.9	2.35
33-33.9	1.75	46-46.9	2.40
34-34.9	1.80	47-47.9	2.45
35-35.9	1.85	48-48.9	2.50
36-36.9	1.90	49-49.9	2.55
37-37.9	1.95	50-50.9	2.60
38-38.9	2.00	51-51.9	2.65
39-39.9	2.05	52 and above	2.70
Smackover, below 24			$1.10
" 24-24.9			1.35
" 25-25.9			1.40
" 26-26.9			1.45
" 27 and above			1.50
Bellevue			1.40
Cotton Valley			1.20
**Urania, La			1.10
†Calion (East El Dorado)			.95

*Gulf and La. Oil Refg. Corp. met S. O. La. prices on Nov. 4 and The Texas Co. and Magnolia Pet Co. met on Nov. 5.

**Posted by Louisiana Oil Refining Corp.

†Posted by Gulf.

STEPHENS, ARKANSAS

Posted by Atlantic Oil Producing Co. and Louisiana Oil Refining Corp.

Below 28	$1.30	29-29.9	$1.45
28-28.9	1.40	30 and above	1.50

GULF COASTAL and SPINDLETOP

Posted by Humble Oil & Refining Co.

Grades A	$1.40	29-29.9	$1.65
Grades B:		30-30.9	1.70
Below 25	1.40	31-31.9	1.75
25-25.9	1.45	32-32.9	1.80
26-26.9	1.50	33-33.9	1.85
27-27.9	1.55	34-34.9	1.90
28-28.9	1.60	35 and above	1.95

Fields classified as A and B are Goose Creek, Hull, Liberty, West Columbia, Orange, Boling and Pierce Junction. All other fields are Grades A only.

Magnolia Petroleum is paying same prices in Spindletop as Humble, except that its top grade is 31-31.9 at $1.75, effective Nov. 16.

California Gasoline Prices Steady; Tanker Rates are Higher

LOS ANGELES, Jan. 22.—The California market apparently has not changed for several weeks, California grade U. S. Motor gasoline can still be bought around 8½ cents, although the prevailing quotation is around 9 cents. This is in cargo lots with tank car lots being quoted 1 to 2 cents more, according to how bad the refiner wants to sell, and the specifications.

The Shell Co. is marketing on the west coast from its service stations a 61 gravity, quick starting product. The Standard is also selling a quick starting winter gasoline, with a gravity close to that of the Shell. Other larger marketing concerns meet this competition, at a published tank wagon price of 13½ cents, without the tax of 2 cents.

Tankers, both dirty and clean bottoms, are still scarce, with the asking charter rate around $1.25 to $1.30, an increase of 5 cents in last three weeks. This increased tanker rate probably accounts for a slight stiffening of the price of California grade U. S. Motor on the Atlantic seaboard.

Fuel oil is moving in cargo lots at a rate that is encouraging. In the week ended Jan. 9, 22 tankers left Los Angeles harbor for Pacific foreign, Atlantic foreign and Atlantic domestic points, carrying 244,300 barrels of crude, 972,375 barrels of fuel oil, 415,445 barrels of gasoline, 2427 barrels of kerosene and 70,275 barrels of gas oil.

Fuel oil is still quoted 80 cents to $1 a barrel with most of the stuff moving around 80 to 85 cents, although one contract was made recently at slightly less than 78 cents, where several companies were bidding.

Some small refiners are getting from existing contracts more crude than they need, and are asking that producers let them off. The refinery runs in some instances have been reduced because of storage conditions.

Refiners are also fearful of continued increase in gasoline stocks on the west coast, with spring some weeks away, when demand can be expected to show the usual increase.

Benzol Output Holds Up

By Special Correspondent

NEW YORK, Jan. 24.—Conditions in the motor benzol market showed a little improvement last week, although there have been persistent rumors of an impending price cut due to the weakness in gasoline tank wagon prices. Motor benzol in tank cars at the ovens was offered around at 23 cents a gallon, but it is doubtful if any could have been had for immediate delivery at this price.

There is a more active inquiry for forward deliveries but no big contracts have been reported. Coke production is holding up well, and consequently the benzol output has been fairly large.

Purchasers, in All Fields (in Effect, Jan. 24, 1927)

GULF COASTAL and SPINDLETOP
Prices of The Texas Co.

Grades A	$1.40	*Grades B	$1.40
‡Grades B (light crude):			
35-35.9	$1.95	38-38.9	$2.10
36-36.9	2.00	39-39.9	2.15
37-37.9	2.05	40 and above	2.20

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on all below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS
Prices of Ohio Oil Co. and Midwest Refining Co.

‡Salt Creek	29-29.9	$1.55
" "	30-30.9	1.60
" "	31-31.9	1.65
" "	32-32.9	1.70
" "	33-33.9	1.75
" "	34-34.9	1.80
" "	35-35.9	1.85
" "	36-36.9	1.90
" "	37 and above	1.95
Elk Basin		2.00
Grass Creek light		2.00
Big Muddy		$1.85
Lance Creek		2.00
Rock Creek		1.85
Mule Creek		1.45
Rex Lake		1.25
‡Osage		2.00
‡Cat Creek, Mont		2.00
Sunburst, Mont		1.35
‡Hogback, N. Mex		2.45
Artesia, N. Mex		1.65

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

The Texas Co. buys Salt Creek and Big Muddy crude.

CALIFORNIA
Standard Oil Co. of California

Gravity	Signal Hill Huntington Beach	Inglewood Torrance	Whittier La Habra	Newhall, McKittrick, Kern River	Olinda-Brea Canon, Richfield	Athens-Rosecrans Dominguez	Montebello	Coyote Hills	Santa Fe Springs	Midway Sunset Elk Hills	Santa Maria and Ventura Posted by Union Oil Co. Lost Hills	Coalinga	Wheeler Ridge	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	$ .75	$ .85	.....	$ .85	$ .85	.....	$ .75	$ .75	$ .75	$ .75	$ .85	$ .85
15-15.9	.87	.87	.85	.75	.87	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
16-16.9	.90	.90	.85	.75	.90	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
17-17.9	.94	.94	.85	.75	.94	.....	.85	.85	.....	.75	.75	.75	.75	.85	.85
18-18.9	.98	.98	.86	.75	.98	.....	.86	.86	.....	.75	.75	.75	.75	.85	.85
19-19.9	1.04	1.04	.87	.75	1.04	.....	.87	.87	.....	.75	.75	.75	.75	.85	.85
20-20.9	1.10	1.10	.89	.....	1.10	.....	.89	.90	.....	.82	.82	.79	.78	.90	.90
21-21.9	1.16	1.16	.91	.....	1.16	.....	.91	.98	.....	.90	.90	.86	.81	.97	.97
22-22.9	1.22	1.22	.94	.....	1.22	.....	.94	1.06	.....	1.00	1.00	.93	.85	1.04	1.04
23-23.9	1.28	1.28	.....	.....	1.28	.....	.97	1.14	.....	1.11	1.11	1.00	.89	1.11	1.11
24-24.9	1.34	1.34	.....	.....	1.34	$1.34	1.01	1.22	$1.02	1.22	1.22	1.07	.93	1.18	1.18
25-25.9	1.40	1.40	.....	.....	1.40	1.40	1.05	1.30	1.08	1.33	1.33	1.14	.97	1.25	1.25
26-26.9	1.46	1.46	.....	.....	1.46	1.46	1.09	1.38	1.16	1.44	1.44	1.21	1.01	1.32	1.32
27-27.9	1.52	1.52	.....	.....	1.52	1.52	1.13	1.46	1.24	1.55	1.55	1.28	1.05	1.39	1.39
28-28.9	1.58	1.58	.....	.....	1.58	1.58	1.17	1.54	1.32	1.66	1.66	1.35	.....	1.46	1.46
29-29.9	1.64	.....	.....	.....	1.64	1.64	1.21	1.62	1.40	1.77	1.77	1.42	.....	1.53	1.53
30-30.9	1.70	.....	.....	.....	1.70	1.70	1.25	1.70	1.48	1.88	1.88	1.49	.....	1.60	1.60
31-31.9	1.76	.....	.....	.....	.....	1.76	.....	.....	1.60	1.99	1.99	1.56	.....	.....	1.67
32-32.9	1.84	.....	.....	.....	.....	1.84	.....	.....	1.72	2.10	2.10	1.63	.....	.....	1.73
33-33.9	.....	.....	.....	.....	.....	1.92	.....	.....	1.84	2.21	2.21	1.70	.....	.....	1.79
34-34.9	.....	.....	.....	.....	.....	2.00	.....	.....	1.96	.....	2.32	1.77	.....	.....	1.85
35-35.9	.....	.....	.....	.....	.....	2.08	.....	.....	2.08	.....	.....	1.84	.....	.....	1.92
36-36.9	.....	.....	.....	.....	.....	2.16	.....	.....	2.16	.....	.....	.....	.....	.....	.....
37-37.9	.....	.....	.....	.....	.....	2.24	.....	.....	2.24	.....	.....	.....	.....	.....	.....
38-38.9	.....	.....	.....	.....	.....	2.34	.....	.....	2.34	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	2.44	.....	.....	2.44	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	2.54	.....	.....	.....	.....	.....	.....	.....	.....	.....
41-41.9	.....	.....	.....	.....	.....	2.64	.....	.....	.....	.....	.....	.....	.....	.....	.....
42-42.9	.....	.....	.....	.....	.....	2.74	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Union Oil Co. also purchases Long Beach Crude and is maintaining the same gravity and price schedule in that field as the Standard maintains in Signal Hill and Huntington Beach fields. The Union also buys and pays the same prices as the Standard in the Rosecrans-Dominguez fields, on gravities ranging from 14 degrees to and including 24.9 degrees and in Santa Fe Springs, on gravities ranging from 20 to and including 23.9 degrees.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are the average market prices for the week on materials used by refiners and compounders f. o. b. shipping point as effective this date.

Refiners' Supplies

	Jan. 24	Jan. 17
Soda Ash light 58% bags.cwt.	$1.32½	$1.32½
Silicate of Soda 60 deg. drums.....cwt.	$1.65	$1.65
Sal Soda wks.....cwt.	.90@1.10	.90@1.10
Caustic Soda 76% solid..cwt.	@3.00	@3.00
Chloride of Lime.....cwt. works.....	@2.00	@2.00
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	10.50@11.00	10.50@11.00
Liquid Chlorine tank cars works.....lb.	@.04	@.04

Compounders' Supplies (Open Market)

Vegetable Oils—

Linseed carloads spot....lb.	10.7	10.3
January	10.7	10.3
Tanks, spot	09.9	0.95
*Soya Bean Tanks, Coast .lb.	09½	09½
Castor Oil—		
No. 1 Carlots, Bbls	@.13½	@.13½
No. 3 Carlots, Bbls	@.13	@.13
Animal Oils—		
English Degras	.05½	@.05½
Domestic Degras, bbls., carloads.....lb.	.04½	@.04½
*Horse.....lb.	.08	@.08
Oleic Acid—		
Dist. Bbls.....lb.	.09½@.09¾	.09½@.09¾
Saponified Bbls.....lb.	.09¾@.10	.09¾@.10
Lard Oils—		
Prime		
Winter Strained, to 1½ffa.	.40-45c.t.lb. .14⅞	.14⅞
Extra Winter Strained, 2 to 4½ffa.	.40-45c.t.lb. .13¾	.13¾
Extra..... 4 to 5 ffa.	.40-45c.t.lb. .12¾	.12¾
Extra No.1. 7 to 10 ffa.	.40-50c.t.lb. .10¾	.10¾
No. 1.....15 to 18 ffa.	.40-45c.t.lb. .10½	.10½
No. 2.....22 to 23 ffa.	.40-45c.t.lb. .10	.10
Prime Edible Tallow under 1⅞ffa. 40-45c.t.N.Y.....lb.	@.08½	@.08¼
Tallow acidless.....lb.	.10¼	.10¼
Lard Stearine.....lb.	.16	.16
Oleo Stearine.....lb.	@.09½	@.09
Neatsfoot Oil—		
Pure.....bbls.-lb.	.12¾	.12¾
Extra.....do lb.	.10¾	.10¾
No. 1.....bbls.-lb.	.10½	.10½
Cold pressed.....lb.	.15¾	.15¾
Fish Oils—		
Menhaden Oil		
Light pressed.....gal.	@.58	@.62
White.....gal.	@.63	@.67
Yellow bleached.....gal.	@.61	@.64
*Herring tank cars coast.....gal.	nominal	@.42
Whale, extra winter bleached.....gal.	@.82	@.82
Naval Stores—		
Turpentine, N. Y.....gal.	@.80	@.80¼
Turpentine†.....gal.	@.73¼	@.74
Rosin, B. N. Y.....bbl.	12.50	12.50
Rosin, F. N. Y.....bbl.	12.90	12.10
Rosin, B†.....bbl.	11.00	10.45
Rosin, F†.....bbl.	11.40	10.50
Rosin Oil 1st run.....gal.	.67	.67
Rosin Oil 2nd run.....gal.	.72	.72
Pine Tar—		
Kiln Burnt.....bbl.	16.00	16.00
Retort.....bbl.	16.00	16.00

†Savannah, Ga., market.
*Nominal.

Alcohol—Denatured—

Formula 5		
Bbls.....gal.	@.42	@.42
Drums.....gal.	@.35	@.35

OIL STOCKS AND FINANCES

National Petroleum News

California Petroleum Issues More Notes

CLEVELAND, Jan. 22.—California Petroleum Corp. is issuing $8,000,000 of 12-year convertible 5 per cent sinking fund debentures dated Feb. 1. The issue has been offered by a syndicate headed by Blair & Co., Inc., and Hallgarten & Co., at 96½ to yield 5.40 per cent.

Proceeds are to be used for the purchase of four tankships, the installation of two cracking units, and for crude oil in anticipation of contract requirements, or to reimburse the corporation's treasury for expenditures for these purposes already made.

Jacques Vinmont, president of California Petroleum, in a letter to the bankers said the company and subsidiaries had production of more than 45,000 barrels a day from 687 wells; 56,000 acres of land owned in fee or under lease in California, Montana and Utah, and six refineries with a daily capacity of 56,000 barrels. Its 14 gasoline plants have a daily capacity of 129,000 gallons. Its transportation facilities consist of 105 miles of pipe line, 45 tank cars and five tankers.

Its marketing division has ocean terminals at Los Angeles, San Francisco, Oakland and Seattle. It has bulk and retail stations in the Pacific coast states.

The debentures are convertible into common stock at $40 a share until Feb. 1, 1930; at $52.50 a share until Feb. 1, 1933; at $45 a share until Feb. 1, 1936, and at $50 a share thereafter until maturity.

Earnings of the company are estimated at $7,931,437 for 1927 after depreciation and depletion but before federal income taxes. The average for the last five years is $7,718,974.

Royal Dutch-Shell Gets Funds in New York

CLEVELAND, Jan. 22.—With the floating of $25,000,000 15-year 4½ per cent debentures by the Batavia Petroleum Co. (Bataafsche Petroleum Maatschappij) this week, the Royal Dutch-Shell group has completed its first major financing in this country. The offering through Dillon, Read & Co. was quickly oversubscribed. The group heretofore has done its financing in the London and Amsterdam markets.

The debentures were offered at 96¼ to yield 4.85 per cent and are guaranteed by the Royal Dutch Co. and Shell Transport & Trading Co. which own 60 and 40 per cent, respectively, of the $120,000,000 outstanding capital stock of the Batavia Company. This company also has outstanding $28,944,000 20-year 4¼ per cent debentures due 1946.

Batavia Petroleum Co. was organized in 1907. Net earnings for 1925 after all charges amounted to over $24,600,000, or more than 10 times maximum interest charges on the entire funded debt, including this issue. For the same year net income of approximately $37,900,000 was reported by the Royal Dutch Co. and approximately $24,500,000 was reported by Shell, a total of approximately $62,400,000 by the two guarantor companies.

Barnsdall's Net Much Larger in 1926

NEW YORK, Jan. 22.—Barnsdall Corp. and subsidiaries in a preliminary statement of 1926 earnings report net of $6,012,331 after interest, taxes, depreciation and depletion compared with $3,094,001 in 1925. The 1926 net was equivalent to $5.25 a share on the combined A and B stock, par value $25 a share, of which 1,137,561 shares were outstanding Dec. 31. In 1925 net equaled $3.29 a share on 928,168 shares. Consolidated income accounts for the two years compare:

	1926	1925
Gross income after exp.	$11,489,101	$5,352,687
Int., tax depr. & deple.	5,476,770	2,258,686
Net income	$6,012,331	$3,094,001
Dividends	2,275,172	455,476
Surplus	$3,737,159	$2,638,525

Cleveland Stock Market

Jan. 21

	Par	Bid	Asked	Last Sale
Canfield Oil Co.	$100	.....	.....	110
do pfd.	100	.....	100	100
Fred G. Clark Co.	10	.....	3½	3¼
National Refining Co.	25	40½	41	40½
do pfd.	100	130	.....	130
Paragon Refining Co.	25	7	7½	7¼
do pfd.	100	65	75	70

xEx-dividend

OIL DIVIDENDS

	Amt.	Payable	Stock of Record
Buckeye P. L. q.	$1	Mar. 15	Feb. 18
Houston Oil pfd. s. a.	$3	Feb. 2	Jan. 21
Mid-Continent Pet. pfd. q.	$1.75	Mar. 1	Feb. 15
Nat'l Refining q.	1½%	Feb. 15	Feb. 1
do extra	2%	Feb. 15	Feb. 1
North Central Texas q.	15c	Mar. 1	Feb. 10
Texas Corp. q.	75c	Apr. 1	Mar. 4
do stock	10%	Apr. 2	Mar. 4
The Texas Co. q.	75c	Mar. 31	Mar. 4

The Texas Corp. to Pay 10 Per Cent Stock

NEW YORK, Jan. 21.—A 10 per cent stock dividend has been declared by The Texas Corp., the new company chartered in Delaware to take over the assets of The Texas Co. of Texas. It will be payable April 2 to stock of record March 4. It is expected that the $3 annual dividend rate will be maintained on the increased amount of stock outstanding. The corporation issued this statement:

"No corresponding stock dividend was declared by The Texas Co., the old company organized in Texas, as a call will be issued soon for a meeting of the stockholders of that company to vote upon its dissolution and a transfer of its assets. Stockholders of the old company can participate in this stock dividend by acting promptly and exchanging their stock. The privilege is still open. More than 94 per cent of the stock has been exchanged."

This dividend will bring the total outstanding capital up to $180,950,000 providing all of the remaining unexchanged 6 per cent of The Texas Co. stock is exchanged for The Texas Corp. stock.

Big Gain In Profits

NEW YORK, Jan. 22.—Gross profit of Transcontinental Oil Co. for 11 months to Nov. 30 was $3,326,587. Net for the 11 months after reserves for depreciation and depletion was $2,526,816. Earnings of the company in December will, it is estimated, raise the gross for 1926 to at least $3,700,000, the net depending upon the amount of additional reserves set up for depreciation and depletion. Net profit in 1925 was $792,581.

Deny Stock Dividend Planned

CHICAGO, Jan. 21.—Directors of the Standard Oil Co. of Indiana have issued a denial that they have considered declaring a 50 per cent stock dividend at their Feb. 7 meeting. Rumors that such action would be taken, have been current in New York, Chicago and Denver lately and are credited with the recent rapid rise in price of Standard of Indiana stock.

White Eagle Oil & Refining Co.—Station sales in 1926 totaled 80,395,421 gallons compared with 74,165,386 in 1925. Total sales amounted to 163,588,663 gallons compared with 146,256,780 gallons in 1925. Crude production amounted to 919,439 barrels compared with 450,901 in 1925.

Transactions In Oil Shares on New York Stock Exchange

1925 High	1925 Low	1926 High	1926 Low		Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Jan. 22 Sales	First	High	Low	Last	Ch'ge
.....	.....	32⅞	24¼	(sh)	814,800	N.P.	Amerada Corp.	50cQ	Jan. 31, 27	19,900	36½	36⅝	34¼	34⅜	—1⅝
79¾	48	74	39⅞	(sh)	200,000	N.P.	American Republics	.....	.....	300	37	40¾	37	40¾	+2¾
47½	32	59½	44¾	$	56,000,000	$ 25	Associated Oil	50cQ	Dec. 24, 26	100	49½	49½	49½	49½	0
117½	95½	128⅞	97		50,000,000	100	Atlantic Refining	.....	June 16, 24	5,800	114	115	112	112⅛	—1⅞
117¾	113½	120	115⅛		20,000,000	100	do pfd	$1¾Q	Nov. 1, 26	200	116⅜	116⅜	116⅜	116⅜	— ⅛
33½	18¾	33½	23¾		25,000,000	25	Barnsdall Corp. A	50cQ	Jan. 3, 27	8,600	32¼	32¾	30⅜	30¾	—1⅝
30	16	29½	22½		3,713,275	25	do B	50cQ	Jan. 3, 27	7,700	29⅝	29⅞	28¼	28¾	— ⅝
34⅜	23⅞	38⅛	29¾	$	47,594,950	$ 25	California Petroleum	50cQ	Dec. 1, 26	30,700	32¼	32⅞	31⅛	31¼	— ⅞
70	42½	94½	50		23,631,200	100	General Asphalt	.....	.....	55,500	84½	85⅛	81½	82⅛	—2⅛
109	86½	140⅛	94⅞		7,354,000	100	do pfd	$1¼Q	Dec. 1, 26	200	125	126	126	126	+2½
85	59	72	50¼		25,000,000	100	Houston Oil	.....	.....	26,600	64	71¾	64	69¾	+5⅜
41¾	13½	34	19⅝	(sh)	500,000	N.P.	Independent Oil & Gas	25cQ	Jan. 17, 27	19,200	32⅛	32⅛	x30⅝	31⅝	— ⅜
14¼	5½	13¾	7¾	$	3,283,960	$ 10	Indian Refining	.....	Dec. 15, 20	400	8	8½	8	8¼	+ ¼
12⅝	6	12½	7½		4,546,490	10	do ctfs.	.....	.....	4,200	7⅞	8½	7⅝	7⅝	— ⅜
110	77	104	90		2,296,400	100	do pfd	.....	Dec. 15, 21	100	107	107	107	107	+11
1½	¼	¾	¼		1,644,760	10	Kansas & Gulf	.....	.....	200	¼	¼	¼	¼	0
.....	.....	24½	19⅛	(sh)	4,000,000	N.P.	Lago Oil & Transport	.....	.....	700	21	21⅞	20⅞	21⅞	+1⅜
23¾	13⅝	19⅞	12	(sh)	1,134,238	N.P.	Louisiana Oil Refining	.....	.....	49,600	17	17¼	15⅞	16	—1
.....	.....	97	93	$	4,000,000	$100	do pfd	$1¾Q	Nov. 15, 26	100	96	96	96	96	0
35½	20⅜	28⅞	16½	(sh)	330,000	N.P.	Maracaibo Oil	.....	.....	14,400	21	22⅜	20½	21¼	+ ⅛
60½	32⅝	63¾	49¼	(sh)	2,349,763	N.P.	Marland Oil Co	$1Q	Dec. 31, 26	64,400	58¼	58½	57¼	57⅜	— ⅜
250	225	.....	.....		45,942,800	$100	Mexican Petroleum	$3Q	Jan. 20, 27	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....		12,000,000	100	do pfd	$2Q	Jan. 20, 27	.....	.....	.....	.....	.....	.....
22½	29	13¾	6	(sh)	945,939	N.P.	Mexican Seaboard	.....	Nov. 15, 24	2,700	7⅜	7⅝	7¼	7⅜	— ⅛
88	25¾	37	27½	(sh)	1,357,800	N.P.	Mid-Continent Petroleum	.....	Aug. 1, 23	89,200	38¾	39⅜	37⅝	38½	+ ½
94¼	83	104¼	90	$	6,718,000	$100	do pfd	$1¾Q	Dec. 1, 26	200	104	104¼	104	104¼	+ ⅜
3¼	⅝	2½	¾		25,415,540	10	Middle States	.....	July 1, 23	23,900	2½	2½	2⅜	2⅜	— ⅛
1½	1½	1¼	½		4,384,680	.....	do ctfs.	.....	.....	1,400	1⅜	1⅜	1½	1½	— ¼
78½	51⅜	83¼	1	(sh)	3,500,000	N.P.	Pacific Oil	.....	Jan. 20, 26	5,700	1⅝	1⅜	1⅝	1⅝	— ⅛
83⅞	59½	76½	56⅛	$	48,307,400	$ 50	Pan American P. & T	$1.50Q	Jan. 20, 27	3,300	63	65⅞	62¾	64⅞	+2⅜
84½	60⅛	78⅝	56⅞		91,246,000	50	do B	$1.50Q	Jan. 20, 27	44,500	63¼	66⅜	62⅞	64⅝	+1⅝
49¾	37¼	46	30	(sh)	400,000	N.P.	Pan American Western B	50cQ	Jan. 30, 27	3,500	36⅝	37½	35⅝	37⅜	+1⅜
6¼	2¼	32	4½	(sh)	198,770	N.P.	Panhandle P. & R	.....	.....	8,900	18⅝	18⅞	16½	16½	—1⅜
60½	37	99⅜	51	$	2,935,200	$100	do pfd	.....	July 2, 23	400	81½	81¾	80⅛	80¼	+8⅛
47⅛	36¼	57⅜	40	(sh)	2,406,736	N.P.	Phillips Petroleum	75cQ	Jan. 1, 27	72,100	58½	58⅝	56⅝	56⅝	—1⅝
3½	1¼	1⅞	½	$	29,622,925	$ 25	Pierce Oil Corp	.....	.....	2,400	¾	¾	⅝	⅝	— ⅛
40	20¼	27⅛	11⅝		15,000,000	100	do pfd	.....	Feb. 1, 22	.....	.....	.....	.....	.....	.....
8¼	4½	7	2½	(sh)	2,500,000	N.P.	Pierce Petroleum	.....	.....	4,800	3⅝	3⅝	3⅜	3½	0
32⅝	12½	20⅞	11	$	11,467,850	$ 50	Producers & Refiners	.....	Sept. 15, 23	23,600	18¾	21⅜	17½	21	+3
47⅝	27	41¾	30¾		2,845,350	50	do pfd	.....	May 1, 25	1,200	38	40⅞	38	40⅝	+3½
33¾	25⅛	31	25¼		75,959,250	25	Pure Oil Co	37½cQ	Dec. 1, 26	64,600	29⅝	29¾	28¾	28¾	— ¾
108½	103	112¾	106		18,000,000	100	do 8% pfd	$2Q	Jan. 1, 27	300	112½	112⅛	112⅛	112⅛	+ ¾
57⅜	48¼	57⅜	47⅜	(sh)	659,082	13.40	Royal Dutch, N. Y. shares	$1.33¼	Jan. 28, 27	2,700	51⅜	52	51¼	51½	— ⅝
49	39½	48⅝	40¾	(sh)	87,685	£2	Shell Transport & T	96.7c	Jan. 17, 27	100	45½	45½	45½	45½	—1½
28¾	21⅝	30⅞	24	(sh)	10,000,000	N.P.	Shell Union Oil	35cQ	Dec. 31, 26	23,700	29⅞	30¾	29½	30¼	+ ½
106½	99½	114	103	$	18,350,400	$100	do pfd	$1½Q	Nov. 15, 26	500	108⅛	108½	108⅛	108½	+ ¼
28½	17¾	28⅝	15⅛		7,208,080	10	Simms Petroleum	50cS.A.	Jan. 3, 27	25,300	21⅜	21⅞	21¼	21⅝	+ ¼
24⅞	17	24⅞	16¾	(sh)	4,500,632	N.P.	Sinclair Consolidated	.....	May 31, 24	108,500	20⅝	22⅜	20⅛	21¼	+ ¾
94⅛	78¾	99½	90	$	17,528,300	$100	do pfd	$2Q	Nov. 15, 26	3,700	99	101⅞	99	101⅞	+3⅛
32⅛	21¾	36⅞	26⅝		27,393,090	25	Skelly Oil Co	50cQ	Dec. 15, 26	19,600	36	36⅛	35	35½	— ½
.....	.....	63¾	52⅝	(sh)	13,016,434	N.P.	S. O. California	50cQ	Dec. 15, 26	24,500	59¾	60¾	59¼	59¼	+ ⅛
47½	38⅜	46⅜	37½		517,064,800	25	S. O. New Jersey	25cQ	Dec. 15, 26	46,200	39½	39⅝	38⅝	38¾	— ¾
119	116¼	119⅛	115		199,972,900	100	do pfd	$1¾Q	Dec. 15, 26	5,700	115⅞	116	115⅞	116	+ ⅛
.....	.....	33¼	32½		421,750,400	25	S. O. New York	40cQ	Dec. 15, 26	76,500	33⅛	34⅛	33	33⅛	+ ⅛
43⅞	38⅛	41⅞	30⅛	(sh)	1,171,951	N.P.	Sun Oil	25cQ	Dec. 15, 26	2,800	33½	34⅞	33½	34½	+1½
6⅛	2	5¼	1	(sh)	1,121,368	N.P.	Superior Oil Corp	.....	Dec. 20, 20	31,300	4¾	5¼	4¾	5⅛	+ ⅛
55	42¾	58	48	$	88,092,200	$ 25	The Texas Co	75cQ	Dec. 30, 26	4,200	57⅝	58	57	57⅝	+ ¼
.....	.....	57⅞	53½		28,599,300	25	The Texas Corp	75cQ	Jan. 1, 27	45,800	57¾	58	57	57	— ⅜
23¾	10⅞	19½	12		8,380,340	10	Texas Pacific Coal & Oil	.....	June 30, 26	10,200	16	16¼	15⅝	15⅞	— ¼
36⅞	30¼	39¼	27	(sh)	2,138,543	N.P.	Tide Water Oil Co	37½c	Dec. 31, 26	600	28¼	28½	28	28½	— ⅜
101	99	103	87¼	$	20,705,100	$100	do 5% pfd	$1.25Q	Nov. 15, 26	600	88⅞	89½	88½	89½	+ ½
5⅞	3½	5½	3	(sh)	3,742,029	N.P.	Transcontinental Oil	.....	.....	25,800	4½	4⅞	4⅜	4⅜	+ ⅜
43⅜	38	58⅜	37¼	$	40,668,950	$ 25	Union Oil of California	50cQ	Nov. 10, 26	10,600	55½	55⅞	54¼	54½	— ¾
134	96¼	120	80		24,423,300	100	Union Tank Car Co	$1¾Q	Dec. 1, 26	1,100	95	98¼	95	97¾	+2¾
117⅛	113¼	118	113¼		12,000,000	100	do pfd	$1¾Q	Dec. 1, 26	.....	.....	.....	.....	.....	.....
31¾	25½	29¼	25⅛	(sh)	490,000	N.P.	White Eagle Oil & Refining	50cQ	Jan. 20, 27	2,600	26⅝	26¾	26	26⅛	— ⅛

*New High †New Low xEx-Dividend Total Sales 1,133,500

PITTSBURGH STOCK EXCHANGE

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions Week Ended Jan. 21 Sales	First	High	Low	Last	Ch'ge
.....	.....	8½	6⅝	N.P.	Andes Petroleum	.....	.....	.....	.....	.....	.....
8¼	5¼	8½	5¾	$10	Arkansas Nat. Gas	4,885	7¾	7⅞	7½	7⅝	+ ⅛
.....	.....	90½	79¾	$100	Columbia Gas (w.i.)	33	91¼	91¼	x88	88	—3⅛
.....	.....	101⅜	95	$100	do pfd w.i.	32	101	101	101	101	0
.....	.....	.....	.....		do rts.	.....	.....	.....	.....	.....	.....
18	14½	17	12½	$10	Devonian Oil	183	14	14¾	14	14¾	+ ½
115⅛	105⅛	116½	112	$100	Duquesne Lt. 7% pfd.	.....	.....	.....	.....	.....	.....
.....	.....	10	5⅛	N.P.	Houston Gulf Gas	222	6¼	6¾	6¼	6¼	+ ¼
.....	.....	46	39	25	Lone Star Gas Corp	9,411	42	42½	41¾	42	+ ⅛
37¼	31	47⅜	33⅝	25	Ohio Fuel Corp	.....	.....	.....	.....	.....	.....
.....	.....	47½	42	....	do ctfs. of deposit	22	46½	46½	46½	46½	+ ½
.....	.....	6¾	5	....	Ohio Oil & Gas	.....	.....	.....	.....	.....	.....
34	26	34	21	25	Oklahoma Nat. Gas	.....	.....	.....	.....	.....	.....
.....	.....	21	19¼	....	do ctfs. of deposit	1,691	20⅜	20½	20⅜	20½	+ ⅛
8¾	5	5⅝	3⅝	5	Pittsburgh O. & G	.....	.....	.....	.....	.....	.....
9⅝	6	10	7½	10	Salt Creek Cons	490	7¾	7⅞	7¾	7⅞	+ ⅛
13¾	8½	27	8	10	Tidal Osage	50	23⅞	23⅞	23⅞	23⅞	—1⅛
.....	.....	45	40	N.P.	Waverly Oil Wks. "A"	70	42	42½	42	42	0

PITTSBURGH CURB MARKET

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions Week Ended Jan. 21 Sales	First	High	Low	Last	Ch'ge
2½	.60	3⅜	2½	$5	Colombia Synd	1,050	3½	3½	3¼	3¼	+ ¾
.60	.15	.20	.06	5	Duquesne Oil	.....	.....	.....	.....	.....	.....
9	5½	22	22	10	Forest Oil	.....	.....	.....	.....	.....	.....
32⅝	64	91½	85	25	Gulf Oil Corp	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	....	Herbert Oil	.....	.....	.....	.....	.....	.....
.....	.....	79	79	100	Houston Gulf pfd	.....	.....	.....	.....	.....	.....
12½	3¼	12	7½	N.P.	Leonard Oil & Dvlp	5,500	9	9¼	9	9¼	0
.....	.....	1⅝	1⅜	N.P.	Mountain & Gulf	.....	.....	.....	.....	.....	.....
.....	.....	30½	29	....	Oklahoma Gas	.....	.....	.....	.....	.....	.....
.47	.20	2	.15	10	Omar O. & G	52,000	82.	2.50	1.95	2.35	+.50
.....	.....	2	1¼	5	Pittsburgh Oil Dev	.....	.....	.....	.....	.....	.....
27½	25	33½	20	10	Plymouth Oil	450	27	27	27	27	0
7	3	7	3	5	States Oil	.....	.....	.....	.....	.....	.....
4	1⅞	3½	2	$1	Texon Oil & Land	600	2¾	2⅞	2¾	2⅞	+ ⅛
....	9	25¾	8	10	TidalOsage(non-voting)	.....	.....	.....	.....	.....	.....

*New High †New Low xEx-Dividend ‡Ex-Rights

Foreign Opportunities

Reserved information may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and its district and cooperative offices by duly registered firms and individuals upon written request by opportunity number. The Bureau does not furnish credit ratings or assume responsibility as to the standing of foreign inquirers; the usual precautions should be taken in all cases, and where no references are offered it does not necessarily imply that satisfactory references could not be given. Correspondence may be in English unless otherwise stated.

23497.—**Gasoline and lubricating oils,** Santa Cruz, Canary Islands, agency.

23498.—**Gasoline, gas oil, fuel oil and paraffin,** Paris, France, purchase and agency.

23586—**Paraffin wax,** Schwanden, Switzerland, purchase.

23587—**Motor oils,** Prague, Czecho-Slovakia, purchase or agency.

23592—**Gasoline, fuel oil and lubricating oils,** Durango, Mexico, purchase.

23723.—**Oils** (unspecified) Basil Switzerland, agency.

23738.—**Motor oils and greases,** Latin America, agency.

Standard Oil Stock Traded in New York

1925 High	1925 Low	1926 High	1926 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Jan. 21 Sales	First	High	Low	Last	Ch'ge
26¾	17¼	21	16¾	£ 4,000,000	£1	Anglo American	60¾cS.A.	May 27, 26	25,500	21⅛	21⅛	20⅝	20¾	— ¼
.....	.....	20¼	16½	.....	£1	do ctfs non-votg	.....	.....	1,500	20	20⅜	19¾	20	— ¼
.....	.....	19	19	.....	....	do voting ctfs	.....	.....	.....	.....	.....	.....	.....	.....
4⅛	1¾	2¾	¾	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	300	1⅛	1¼	1⅛	1¼	0
12¾	8	8	8¾	$ 10,000,000	$10	do pfd	.....	.....	100	4¼	4¼	4¼	4¼	+ ⅛
240	205	301	226	1,000,000	100	Borne Scrymser	$4S.A.	Oct. 15, 26	.....	.....	.....	.....	.....	.....
.....	.....	70	49	.....	....	do new	.....	.....	.....	.....	.....	.....	.....	.....
72	55½	59½	42	10,000,000	50	Buckeye Pipe Line	$1Q	Dec. 15, 26	150	47½	47½	47	47	0
74	48½	82½	65	3,000,000	25	Chesebrough Mfg	75cQ	Dec. 28, 26	500	77½	82	77½	81¾	+4¼
115	110	.....	.....	1,000,000	100	do pfd	$1¾Q	Sept. 30, 26	.....	.....	.....	.....	.....	.....
31½	21¼	25⅜	17⅝	34,914,280	10	Continental Oil	25cQ	Dec. 15, 26	28,100	22½	22⅝	22⅛	22⅛	— ⅛
17⅝	10	17	13½	1,500,000	25	Crescent Pipe Line	.....	Sept. 15, 25	600	14	16	14	16	+2
156	132	137	102	3,000,000	100	Cumberland Pipe Line	$3Q	Dec. 15, 26	1,300	108	108½	107½	108½	— ½
96	61	63¾	48	5,000,000	100	Eureka Pipe Line	$1Q	Nov. 1, 26	.....	.....	.....	.....	.....	.....
68½	23½	32½	9⅞	16,000,000	100	Galena Signal Oil	.....	June 30, 25	2,100	10½	12	10¼	12	+1½
105	88	94½	35	4,000,000	100	do new pfd	.....	June 30, 26	80	46	50	46	48	—5½
114	95	97½	45	2,000,000	100	do old pfd	.....	June 30, 26	90	54	54	51	51	—4
95	42¼	68¼	52	72,916,650	25	Humble Oil & Refining	30cQ	Jan. 1, 27	13,800	61¼	62¾	61¼	61¾	+ ⅝
154½	127	144½	125¼	20,000,000	100	Illinois Pipe Line	$6S.A.	Dec. 15, 26	350	127¼	128	127¼	128	+1½
39¼	27¼	39¾	31½	(sh) 6,491,852	N.P.	Imperial of Canada	25cQ	Dec. 1, 26	18,800	39⅞	41	39⅝	40⅞	+1⅛
84	57½	70	54¼	$ 5,000,000	50	Indiana Pipe Line	$1Q	Nov. 15, 26	250	61¾	62½	61¾	62	+ ½
35¾	22½	35¼	28¾	(sh) 7,118,138	N.P.	International Petroleum	25c	Nov 15, 26	34,100	32½	33¾	32⅝	33⅜	+1⅛
25¾	16½	20¾	12½	$ 6,382,500	$12½	National Transit	25cQ	Dec. 15, 26	500	13¾	13⅞	13¾	13⅞	+ ⅛
79	49¼	51½	27½	5,000,000	100	New York Transit	.....	July 15, 26	.....	.....	.....	.....	.....	.....
88	67½	80½	64	4,000,000	100	Northern Pipe Line	$3S.A.	Jan. 1, 27	50	73½	73½	73½	73½	+1
75¾	60¼	67¾	55¾	60,000,000	25	Ohio Oil Co	50cQ	Dec. 15, 26	6,400	60	62½	60¼	62	+2½
44½	19	24¾	15	10,000,000	25	Penn Mex Fuel	.....	May 21, 25	500	17¼	17¾	17¼	17¾	+ ¾
65⅜	45¾	60¼	48	60,000,000	25	Prairie Oil & Gas	50cQ	Nov. 30, 26	33,700	53	55½	53	55	+3¼
120¾	106	137½	122¼	81,000,000	100	Prairie Pipe Line	$2Q	Jan. 31, 27	2,250	134¾	135½	134½	135	+ ½
254	200	220	184½	4,000,000	100	Solar Refining Co	$5S.A.	Dec. 20, 26	40	196	196	194	196	+1
103	63	74½	21	10,000,000	100	Southern Pipe Line Co	.....	Mar. 1, 26	200	25	25	25	25	+1
47⅛	45	50	34½	20,000,000	25	South Penn Oil Co	50cQ	Dec. 31, 26	1,800	41¼	41½	39½	39½	— ½
84	50	58½	49	3,500,000	100	South West Pa. Pipe Line	$1Q	Dec. 31, 26	100	55½	55½	55½	55½	— ½
70¾	59½	70½	60½	$ 22,756,258	$25	S. O. Indiana	62½cQ	Dec. 15, 26	160,400	70⅛	74⅛	70	72¼	+2
46	30½	36½	16½	8,000,000	25	S. O. Kansas	.....	June 16, 24	1,900	20	20⅞	20	20⅞	+ ⅞
137	114¾	134¾	108	16,864,434	25	S. O. Kentucky	$1Q	Dec. 31, 26	1,800	120	122¼	120	121⅝	+1⅞
.....	.....	51⅜	42	4,518,000	25	S. O. Nebraska	62cQ	Dec. 20, 26	2,300	47¾	48⅜	47¾	48⅜	+ ⅞
.....	.....	.....	.....	.....	....	S. O. N. J. w. i.	.....	.....	3,100	39¼	39⅜	38¾	38¾	—1⅛
369	338	365	288	14,000,000	100	S. O. Ohio	$2½Q	Jan. 1, 27	270	351	351	340	340	—13
125	116	122	117	7,000,000	100	do pfd	$1¾Q	Dec. 1, 26	160	119¼	121	119	120	+1¾
27	12	23	15	1,722,931	25	Swan-Finch Co	.....	Nov. 1, 19	.....	.....	.....	.....	.....	.....
109½	80¼	112	90¼	61,919,950	25	Vacuum Oil Co	50cQ	Dec. 20, 26	15,400	97¾	103	97¾	102¼	+4½

NEW YORK BONDS

Week Ending Jan. 21

	High	Low	Last	Ch'ge
Amer. Rep. Deb. 6s	99½	99⅛	99½	+ ⅜
Assoc. Oil gold 6s	102¾	102¾	102¾	0
Atlantic Refg. deb. 5s	101⅞	101¾	101⅞	+ ⅛
Barnsdall Corp. sf 6s	105¾	104	104½	+ ½
Barnsdall Corp. 6s ex war.	93¾	92	93½	— ⅛
Cal. Petrol. sf 6½s	103½	103½	103½	0
Cal. Petrol. Cor. 5½s	102¼	101⅛	101⅜	— ⅝
Empire Gas & Fuel 7½s	106¼	105¼	106¼	— ¾
Empire Gas & Fuel 6½s	104	100¼	104	+3⅞
Gen. Asphalt 6s	107	106¼	107	— ⅛
Gen. Petroleum 5s	101⅞	101⅜	101½	— ¼
Humble Oil & Refg. 5½s	103½	102⅛	102¼	0
Mid-Cont. Pet. 6½s	105	104⅞	104⅞	— ⅛
Pan-Amer. P & T 7s	105¼	105	105¼	+ ¼
Pan-Amer. P & T 6s	105½	104⅝	105½	+ ⅜
Pierce Oil deb 8s	100¼	100¼	100¼	— ⅛
Prod. & Refnrs. 8s	110⅞	110¾	110¾	0
Simms Pet. cvt. 6s	104⅛	103½	103¾	— ¼
Sinclair Con. Oil Col. 7s	101⅞	99⅞	101½	+1½
Sinclair Con. Oil Con. 6½s	99⅛	97	99	+1¾
Sinclair Con. Oil 6s	101⅞	100⅛	101¾	+ ⅝
Sinclair Crude Oil 6s	101	100¾	101	+ ¼
Sinclair Pipe Line sf 5s	94⅞	93⅞	94⅝	+ ⅛
Skelly Oil 6½s	.....	.....	.....	.....
Superior Oil 7s	101¼	101	101	+ ¾
Union Oil of Cal. 6s-A	108⅞	108⅞	108⅞	+ ⅛
Union Oil of Cal. 5s-B	.....	.....	.....	.....
Union Oil of Cal. 5s-C	99⅞	99½	99⅞	+ ½

NEW YORK CURB BONDS

Week Ending Jan. 21

	High	Low	Last	Ch'ge
Beacon Oil 6s '36	102⅞	102	102¼	— ½
Cities Serv. 6s '66	100	99⅝	99⅞	— ⅛
Cities Serv. 7s "D" '66	124¼	124¼	124¼	—1¼
Galena S O 7s '30	91⅞	90⅛	90⅛	—1¾
General Pet. 6s '28	101⅝	101⅜	101⅜	— ¼
Gulf Oil 5s '37	100⅝	100¼	100⅜	+ ¼
Indepen. Oil 6½s '31	102	101¾	102	+ ⅛
Pan Amer. Pet. 6s '40	100¼	100⅛	100¼	— ¼
Pure Oil 6½s '33	103½	103⅛	103¼	— ⅛
Richfield Oil 6s wi '41	99	99	99	0
S. O. N. Y. 4½s '51	97⅞	97¾	97⅞	0
S O N Y 6½s '33	105¼	104⅞	105¼	+ ¼
Sun Oil 5½s '39	100½	100¼	100¼	+ ¼
Trans. Cont. Oil 7s '30	99⅛	98	99⅛	+1
United Oil Prod. 8s '31	75¼	64	64	—14¼

Shaffer Oil & Refining Co.—Net operating earnings in the 12 months ended Nov. 30 amounted to $6,179,148 compared with $4,093,930 in 12 months ended Nov. 30, 1925. November net earnings were $395,233 compared with $295,023 in November, 1925.

New York Curb Market

1925 High	1925 Low	1926 High	1926 Low	Par Value	Stocks	Transactions week ended Jan. 21 Sales	First	High	Low	Last	Ch'ge
11½	2½	14½	4	$ 5	Amer. Maracaibo	11,900	6½	6⅝	6¼	6¼	— ¼
8⅜	5	8¾	5¾	$10	Arkansas Nat. Gas	2,300	7⅝	7¾	7½	7¾	+ ¼
.....	.....	19⅜	14⅜	N.P.	Beacon Oil	8,900	19⅜	19⅜	18½	19	— ⅛
47½	38	83½	82	$25	British-American	.....	.....	.....	.....	.....	.....
10¾	2¾	28¾	9¼	25c	Carib. Syndicate	12,400	24¼	25¾	24¼	25	— ⅜
43	35	51	37½	$20	Cities Service	29,200	51¼	52⅜	51⅛	52⅜	+ ⅞
85¾	80¼	92½	82¾	100	do pfd	7,200	91½	91⅝	91⅛	91⅜	— ⅛
8	7¼	8¾	7¾	10	do pfd. B	.....	.....	.....	.....	.....	.....
21¾	17½	25¼	19	10	do bankers' sh	200	25½	25½	25½	25½	— ¼
2¾	.60	3½	1¾	N.P.	Colombia Syndicate	103,000	2⅛	3⅛	2⅞	3¼	+ ⅛
15	8¼	16	10	N.P.	Creole Syndicate	63,000	14¼	14⅞	13⅞	14¾	+ ½
12¼	5	7¾	1¾	N.P.	Crown Central	2,700	2¾	3	2¾	3	+ ¼
7	2	4	1⅛	N.P.	Derby Oil & Ref	.....	.....	.....	.....	.....	.....
27	10½	19	13	N.P.	do pfd	700	11½	11½	10½	10½	— ½
.....	.....	2¾	.60	.....	Euclid Oil	.....	.....	.....	.....	.....	.....
6	1¾	7½	2½	N.P.	Gibson Oil	37,900	3¾	3¾	3⅛	3⅛	— ½
3¾	1¾	2	.63	N.P.	Gilliland v.t.c	100	1	1	1	1	— ⅜
98¼	63½	98	82	$25	Gulf Oil Corp	3,400	96	96¼	94⅞	95	— ⅛
5⅞	2¼	4	1	N.P.	Kirby Petroleum	4,900	1⅜	2	1⅜	1⅞	+ ⅝
13	6	12¼	5¾	N.P.	Leonard Oil & Dev	13,000	9	9½	9	9¼	+ ⅜
25⅜	18	27	20	N.P.	Lion Oil Refining	3,000	25	25⅞	25	25⅜	+ ⅜
.....	.....	46	31½	$25	Lone Star Gas	2,200	41⅜	42½	41⅛	42	+1
4¼	1¾	3¾	1½	N.P.	Marland of Mexico	.....	.....	.....	.....	.....	.....
5¾	.56	5½	1⅞	$10	Mexican-Panuco	5,900	3	3	2½	2¾	— ¼
2	1	1¾	1¼	1	Mountain & Gulf	4,200	1⅜	1½	1⅜	1½	+ ¼
26¼	18¾	26	22½	10	Mountain Prod	11,300	25¼	26⅞	25¼	26¾	+1½
6¾	3¾	6¾	5	5	New Bradford	5,500	5½	5⅞	5⅜	5⅞	+ ⅜
24¾	16¼	11¾	2	10	New England Fuel	.....	.....	.....	.....	.....	.....
19¾	6¼	17	9¾	1	New Mex. & Ariz	1,100	12¼	12⅜	12	12	— ½
12½	8¼	17	8	$5	New York Oil	100	9⅜	9⅜	9⅜	9⅝	— ⅜
37	14	36	34½	$5	Ohio Fuel Corp	.....	.....	.....	.....	.....	.....
.....	.....	9⅞	6	N.P.	Pandem	3,600	8⅛	8¼	7¾	8¼	0
2½	.90	2¾	.20	N.P.	Peer Oil Corp	2,000	.37	.37	.35	.35	+4
28¼	16	22¾	12	$10	Pennok Oil	600	13½	13½	13	13	— ½
44½	16	38	14½	$5	Red Bank Oil	300	24¼	24⅜	24	24	— ⅜
33½	19	28¾	12	N.P.	Reiter-Foster	3,200	13¾	14	13	13¼	— ¾
.....	.....	27½	22	$25	Richfield Oil w.i	800	26	27½	25¼	27½	+1½
9½	3½	7⅞	4½	N.P.	Ryan Consolidated	200	6	6	6	6	— ⅛
9¾	6⅛	10	7½	$10	Salt Creek Cons	2,100	7⅞	8	7¾	8	+ ⅛
35	24	36	26¾	10	Salt Creek Prod	6,600	30½	31⅞	30½	31½	+ ¾
3⅞	1	4⅜	1⅛	5	Savoy Oil	800	3	3¾	3	3½	— ¾
13¾	9	27	7¾	10	Tidal Osage	1,600	24⅛	24⅛	23	23½	—1
10¾	8	25¾	8¼	10	do non-voting	2,100	21¾	21¾	20½	20¾	— ½
.....	.....	27	20¾	N.P.	Tide Water Assoc	11,500	22¾	23½	22¾	23¼	+ ⅜
.....	.....	99¼	93¾	100	do pfd	3,400	95¾	95¾	95½	95⅝	+ ⅜
4¾	1¾	8	4¼	5	Venezuelan Pet	3,600	6¾	6⅞	6¾	6¾	0
.....	.....	29¼	23½	N.P.	Warner-Quinlan	300	26	26	25½	25½	— ½
31¼	22¾	36¼	22	N.P.	Wilcox O. & G. new	15,400	28⅞	32	28⅞	31⅞	+3⅛
7	3⅞	9½	4¾	$ 1	Woodley Petroleum	200	7⅝	7¾	7⅝	7¾	— ¼

*New High †New Low xEx-Dividend.

Middle Atlantic Jobbers Now Have Secretary

HARRISBURG, PA., Jan. 24.—A full-time paid secretary was employed Jan. 1 by the Independent Petroleum Marketers of the Middle Atlantic States, an association which was organized at the Atlantic City meeting of the National Petroleum Marketers Association last November. E. Walter Hudson, Norristown, Pa., is the secretary and his temporary headquarters are with the president of the association at Cameron and Paxton Sts., Harrisburg. Permanent offices of the association will be opened in Philadelphia shortly, it is planned.

Elected officers are: R. C. Paul, Harrisburg Oil & Supply Co., Harrisburg, president; F. H. Tripp, Lincoln Oil Co., Camden, N. J., and C. P. Hearn, president of Hearn Oil Co., Wilmington, Dela., vice presidents; S. W. Rusk, Rusk Oil Co., Philadelphia, treasurer; and Jack Shlifer, Intercity Oil Co., Philadelphia, secretary.

Besides the above officers, the board of directors includes: John W. Sherwood, Sherwood Bros., Baltimore, Md.; P. F. Erdman, Subway Oil Co., Reading, Pa.; C. R. Harned, C. R. Harned Oil Co., Allentown, Pa.; Paul Himmelfarb, Penn Oil Co., Washington, D. C.; M. H. Levinson, Peerless Oil Co., Scranton, Pa.; Mortimer F. Levy, Liberty Oil Co., Pottsville, Pa.; Clarence Schock, Schock Independent Oil Co., Mt. Joy, Pa.; and Harry Sherby, Mylex Oil Co., Washington, D. C.

The association includes oil jobbers of Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia. It has been incorporated under the laws of Delaware.

The first general meeting of the association is scheduled to be held in Philadelphia Jan. 25. L. V. Nicholas, president of the National Petroleum Marketers Association, Chicago, will be the principal speaker. Gen. Edward Martin, auditor general of Pennsylvania, and M. S. Tarner, chief of the gasoline tax division, will also speak. Mr. Tarner was to present a bill at the meeting to be introduced to the state legislature providing for reimbursement to the wholesaler for the collection of gasoline taxes, and for other changes in existing state laws.

New Service Station at Oberlin

OBERLIN, O.—The Cities Service Oil Co. has completed an attractive service station here, which was built with an idea of harmonizing with college surroundings here. It is equipped with concrete and steel drain pit, spring sprayer, Fry flusher, and high pressure lubrication according to Claude L. Lyman, Oberlin manager for the company.

Mr. Lyman has mailed out postal cards calling attention to oil changing and greasing service. Lubrication service is specialized in, and Koolmotor oil of the Cities Service company, is handled.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

PRACTICAL BUSINESS MANAGER with broad experience desires connection with Oil, Gas, Industrial or Manufacturing firm, with offices in Tulsa, Okla. Address Box 766, care this publication.

DIVISION MANAGER with 6 years experience in distribution of petroleum products. Prefer territory in Central States. Box 768.

MAN WITH BROAD EXPERIENCE in executive, accounting and office management, seeks position of responsibility with growing oil company or allied concern. 12 years in division office of large oil company as office manager, traveling auditor and assistant to division manager. Sober, industrious, reliable. Especially strong in systematizing work and directing personnel. Address Box 769.

EXECUTIVE with twelve years experience all departments petroleum products marketing, including service station, tank truck and road force. Two years accounting, three years division auditing, seven years assistant division manager in charge of accounting, credits, purchasing, sales promotion, and supervision all branches of sales units and equipment. 31 years old, energetic, honest, desires position with responsible company, preferably in Cleveland, but any offer considered. Box 775.

Young man with over twelve years sales experience in oil business would like to become affiliated with large company as Eastern or Export representative. Have been selling gasoline, lubes, etc., to jobbers in Pennsylvania, Maryland, District Columbia and surrounding states, also to exporters in New York. Would also make good buyer. Address Box 770, care National Petroleum News.

Situations Open

ESTABLISHED MANUFACTURERS REPRESENTATIVES WANTED

To sell on liberal commission basis, nationally known Gasoline Hose and Couplings. Reply must state in detail lines you are now selling, and exact territory covered. Box 772.

SALESMEN WANTED

We have several straight commission positions open on lubricating oil and grease. Commissions are very liberal, in fact the plan works out better than if you were in business for yourself. If you think you are interested in this position in and about Greater Boston, write or phone for appointment.

THE QUINCY OIL COMPANY
Quincy, Mass.

Large Oil Refinery located in East has opening for a young Mechanical Engineer and several young Chemical Engineers willing to start at bottom and learn business. Must be college graduates and applications should give full particulars and references as to training, character and ability. Box 767.

Patent Attorneys

INVENTORS who derive largest profits know and heed certain simple but vital facts before applying for patents. Our book Patent-Sense gives those facts; sent free. Lacey & Lacey, 679 F St., Washington, D. C. Established 1869.

Wanted—To Buy

GREASE FORMULAS WANTED

400°F. Brick Lubricant, Driver Journal Compound and Smooth Cup Grease that can be melted and return to grease again.

E. M. Loehrs, 141 Hillside Road, Elizabeth, N. J.

For Sale

THREE TRUCK TANKS FOR SALE—one Farrel, 300-gallon 2-compartment, one Heil 600-gallon 3-compartment, one Davis-Ohio 1000-gallon 4-compartment. New. Never seen any service and complete in every respect. For description and prices, address Box 764.

FILTER PRESSES AND TANK CARS

Two Sweetland Filter Presses, size No. 12, $2500 each. Also 23 tank cars, 8000 gallon, at $575 each.

Acme Oil Corporation,
189 No. Clark St., Chicago, Ill.

WE ARE MANUFACTURING A PATENTED DEVICE for measuring gasoline in underground tanks for filling stations. Owing to lack of capital to develop a sales organization, we wish to dispose of our interests. Wonderful opportunity for financially responsible company who is selling equipment to the oil trade. Several hundred instruments already and giving wonderful results. Box 771.

TANK TRUCK FOR SALE

1200-gallon four compartment tank truck on 1920 White Chassis. Tank and cab new. Truck in excellent condition; total mileage, 8,000. Bargain if sold at once.

Address Roberts & White, Sharon, Pa.

FOR SALE BULK STATION—for sale of gasoline, coal oil and lube, etc. Good stand in Southern town. Sales will run about 350,000 gallons annually. Country growing, and sales increasing all the time. Good reason for selling. Good chance for some big oil company who wishes new bulk station or for some individual who wants growing established gas and oil business. $20,000 is the price set and the business is worth every cent of it. For further information address Box 773.

Miscellaneous

WHAT IT COSTS

For "Position Wanted" advertisements—5 cents per word. Minimum cost $1.00. All other classified advertising—10 cents per word. Minimum cost $3.00. Advertisements set in special type or with border—$4.00 per column inch. Copy must reach us not later than Friday preceding date of issue.
All advertisements carried on this page are payable in advance.

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